AMERICAN ANTIQUITY

VOL. II JANUARY, 1937 NO. 3

EDITORIALS

CONFERENCES . . . Your editor has just returned to his desk from having attended an archaeological conference. His experiences at this and other, similar conferences have so convinced him of the benefits to be derived from meetings of this character that he can not resist the urge to relieve himself of some of his reactions to the subject, at the readers' expense.

The conference serves a number of excellent purposes. The individual worker in a given field is to a greater or less extent removed from his fellow workers. Frequent, even occasional contacts with each of them, without some coöperative program, is impractical if not impossible. His principal means of access to the results of their research is in the form of published reports, and such reports in many instances do not appear in print until years have elapsed following the completion of the work. Brief accounts, conveyed by means of letter or published in news mediums, may augment one's knowledge of the immediate situation in the general field to some slight extent, but the opportunity to become thoroughly acquainted with the phenomena of the general field is rarely afforded.

At least the broader aspects of the local student's problems are general for a relatively large area which includes that of his own experience, and a thorough comprehension of these general problems demands a basic knowledge of the general field. Nevertheless, the student, however assiduously he may guard against it, becomes a local specialist and reacts to the entire field in terms of his own comparatively limited experiences.

In short, the local student requires a basic understanding of the general field which includes the more specific province of his immediate experience, and is apt to be denied the opportunity to keep constantly informed on current developments.

The sectional archaeological conference contributes toward the solution of this problem: by bringing together research students in related

provinces of a field, each equipped to discuss and illustrate problems and developments from his own specific angle of approach; by fostering better coöperation between students, based upon contacts that tend to establish friendly personal relationships, and upon the acquisition of a broader factual framework; and by permitting one to visualize general problems not clearly apparent from any single, local viewpoint.

We believe in conferences, be they local or broadly sectional; specific or general in scope; invitational or open; staged in field or laboratory. We recommend that all students given the opportunity attend them.

W.C.M.

USE OF MEMBERSHIP CARDS . . . The membership card which is issued to each Affiliate of the Society is a symbol of his active participation in furthering the objectives of the organization. It represents a comradeship with the ever increasing group of those who seek to understand more clearly the native history of the American Indians. Between Affiliates it may well serve as a means of establishing a friendship based upon common interests. Yet the privileges and prerogatives which this card bestows upon its possessor are always measured in terms of the prestige enjoyed by the Society for American Archaeology. The reputation of the Society depends upon its members.

In a very real sense, this card is also a symbol of a contract between its owner and the Society. It signifies that the person whose name appears upon it is one who recognizes the importance and difficulty of archaeological research, as well as the thrill that comes with the realization that some new detail has been added to the present knowledge of past civilizations. Archaeological evidence must be handled carefully and preserved properly in order that it be not lost. Objects taken from sites must always be kept in association with their record. Only by carefully piecing together all the clues to the past will it be possible to obtain conclusions which will result in a wider appreciation of the aims and limitations of archaeological research.

The membership card carries with it both privileges and obligations. The degree to which each is met by the Affiliates will determine the prestige of the Society in the minds of its own members as well as in the opinion of the general public. A proper use of the card will place the Society in such an enviable position that each Affiliate will regard his membership with pride. Yet every misuse of the card, in order to secure consideration or privileges which the owner is not qualified to receive,

lowers the Society in public opinion and tends to reduce the value of membership and the usefulness of the activities of the organization.

Our membership card is not a magic lamp which grants its owner powers and abilities in archaeological work which he did not formerly possess. Rather might the card be likened to a conscience which causes the Affiliate to forego some of his individual desires in order that materials and evidence may be preserved for the benefit of the public and, more especially, of the students of native American history who, with him, are responsible for the future and the good name of the Society for American Archaeology.

C.E.G.

NEW WORLD MAN

FRANK H. H. ROBERTS, JR.[96]

IN THE SUMMER of 1935, the finding of Folsom Man was heralded throughout the country by the daily press and several Sunday supplement articles on the subject appeared in various papers. The articles were based on a publication, *New World Man*,[97] by J. D. Figgins, then director of the Colorado Museum of Natural History, now with the Bernheim Foundation, Louisville, Kentucky. The identification of the remains as those of Folsom Man seemingly was made by some reporter who noted that they were found eight miles east of Folsom, New Mexico. Beyond the fact that the bones were in a bank of the Cimarron River, fourteen miles east of the quarry where the original Folsom points and extinct bison were uncovered ten years ago, there was nothing to warrant the conclusion that they represented Folsom Man. Mr. Figgins made no such assertions in his report, although he mentioned the bison pit in discussing the geology of the region and the age of the human remains.

The bones were turned over to Mr. Figgins in January, 1935 by the finder, Mr. J. C. McKinley of Branson, Colorado. They consisted of a skull in fragmentary condition, the mandible, damaged vertebrae, hand and arm bones, bits of scapulae, parts of the pelvis, and pieces of tibiae, fibulae, and femorae. All of the foot and ankle bones were missing.

Later Mr. McKinley took Mr. Figgins to the site, which is three-quarters of a mile southeast from the junction of the Cimarron Canyon highway and the road that leads northward to Branson, and pointed out the place in the south bank of the river where he had found the skeleton. Mr. Figgins reports that the skeleton was thirteen feet six inches below the present surface in a stratum consisting of fine quartz sand intermixed with some soluble material and a slight amount of lime, clearly an aqueous deposit. Some sixty feet east of the spot where the skeleton was found are traces of an old channel, refilled with cross-bedded sand, pebbles and boulders, cutting through the stratum. Irregularly distributed through the deposits are numerous lenses of the same type. In addition there are other lenses, composed of similar material, which rest on the basal substratum underlying the layer that contains

[96] Bureau of American Ethnology, Smithsonian Institution, Washington, D. C.
[97] Procs. Colo. Mus. Nat. Hist., Vol. 14, No. 1, Denver, July 22, 1935.

the bones. The latter were found close to a lens of this type which led Mr. Figgins to conclude: "If the current which deposited the material comprising this lens was from a west to east direction, that of the present stream, one may visualize the broken and contorted human body finding lodgment in the deeper and less turbulent water below the barrier of the forming lens."[98]

When found, the skeleton was lying face downward in a distorted position indicating accidental deposition and not a burial. No artifacts nor objects of any kind accompanied the bones. Above the stratum in which they lay is a four-foot layer of silt such as covers the floor of the present valley. In the silt stratum scattered fragments and individual bones of modern bison are of frequent occurrence. Below that level bones of any kind are rare. Because of the lack of associated fossil material, as well as artifacts, the determination of the age of the skeleton must be made from its state of preservation and the geological evidence. In this connection Mr. Figgins noted: "It is apparent that the preservation of this specimen is well advanced and in so far as the term fossilization may be applied, it is equal to, or exceeds, that of the Pleistocene bison remains found west of Folsom, and the mammoth skeletons taken at Dent, Colorado."[99] On the basis of the condition of the bones and his interpretation of the geology, Mr. Figgins concluded: " . . . that the age of the human remains must be regarded as not less than equivalent to that of the extinct bison and dart points that were found in association by Frank M. Figgins and Carl Schwachheim, on a branch of the Cimarron River six miles west of Folsom, New Mexico, in 1926."[100] Granting this to be true, there is still the problem of the age of the Folsom bison pit. Some are of the opinion that it represents a Pleistocene deposit, as indicated by Mr. Figgins in his discussion of the fossilization of the bones, while others believe it more recent. In fact, several competent geologists who studied the site at the time of the Folsom point finds have expressed themselves to the effect that the conditions are such that it cannot be dated.

The skull was restored in the laboratory at the museum in Denver. From his studies of it, Mr. Figgins was impressed by certain resemblances which it bears to the Brünn and Predmost skulls of Moravia. This, together with his observations on the other bones, led him to conclude that the individual occupied a position intermediate between

[98] Ibid., p. 2.
[99] Ibid., p. 1.
[100] Ibid., p. 2.

those of the primitive types of Europe and those of modern races. He furthermore felt that because of the differences which he observed between it and modern examples, it should be considered a type upon which to base comparisons, and accordingly named it *Homo novusmundus Sp. Nov.* (Plate 12).

The writer saw the skull and the other bones at Denver during the summer and had several talks with Mr. Figgins about the find. The result was that upon my return to Washington from the Lindenmeier site in northern Colorado, the skull was sent to me with the request that it be submitted to several authorities for critical study and comment. This was done and the following memoranda were obtained, together with permission from the writers to print them in AMERICAN ANTIQUITY.

Dr. Aleš Hrdlička, Curator of Physical Anthropology, United States National Museum, contributed the following:

"A thorough examination of the Figgins specimen, partly in the presence of Stewart, Collins, and Setzler, shows as follows:

"The skull is that of a middle-aged male, of moderate robustness and probably of rather short stature.

"The skull is quite normal but has suffered, on the left side, some post-mortem compression.

"On first sight and from the front the specimen looks somewhat inferior, but this is due partly to the fact that the nasal bones are missing and partly to a broad nasal aperture with marked subnasal gutters.

"A detailed examination and measurements of the specimen failed to reveal anything either very primitive or un-American.

"It so happened that when the skull came I was examining a series of crania from partly prehistoric, partly historic mounds in the Sacramento Valley. Comparing the Colorado Skull with these specimens we found that feature after feature presented by the Figgins skull could be duplicated in the Sacramento material. This does not mean that the specimen under consideration belongs to the same people as those of the Sacramento Valley; but the type shows certainly numerous relations. Many and perhaps all of the features of the Figgins skull could, however, be also duplicated in the oblong-headed Pueblo and the Algonkin crania.

"There is only one possible conclusion, which is that the Figgins skull is that of an American Indian of a somewhat inferior type but of a type the elements of which are rather common in certain parts of California and other regions.

"To make of this specimen a representative of a new species of man in America is fanciful and wholly unjustifiable."

Dr. Earnest A. Hooton, Professor of Physical Anthropology and

Skull of *Homo novusmundus*.

UNIV. OF MICH.

Chairman of the Division of Anthropology at Harvard University, wrote as follows:

"The skull described by Mr. Figgins and transmitted to me by Dr. F. H. H. Roberts, Jr., is of considerable anthropological interest. Its geological age and archaeological importance are matters with which I am not concerned in this statement. The skull shows considerable distortion which may be post-mortem, but I am not entirely convinced of its freedom from a slight premortem artificial deformation. Nevertheless, I think that the probabilities favor the view that the distortion is post-mortem. One is immediately impressed by the marked degree of facial prognathism exhibited by this specimen. Protrusion of the face greatly exceeds the amount usual in American Indians, although it may possibly be duplicated in individual cases. I think that the restoration of the skull does not add to the degree of prognathism originally presented. The type of skull in question bears a striking resemblance to one which I have described in the Pecos series and have called by the name of 'Pseudo-Australoid.'[101] There is the same marked development of the brow-ridges, receding forehead, short, broad face, low orbits, platyrrhiny, and prognathism, associated with a narrow, elongated, and somewhat scaphoid skull. The Pseudo-Australoid appearance is more marked in this specimen than in any skulls that I have encountered in American series. The general resemblance to the crania of Australian natives is rather striking, although not of such a nature as to suggest racial identity. My views on this matter of Australoid resemblances amongst early American crania are already on record.[102] Crania resembling this specimen are to be found in the Southwest among Utes and other tribes, and I am of the opinion that skulls of this general type occur sporadically in series of American crania from various parts of the country. The paramastoid processes seen on this skull are of no probable phylogenetic importance, but may be connected with the distortion of the skull."

Dr. George Woodbury, who is engaged in a series of studies on Southwestern skeletal material under a project sponsored by Gila Pueblo, Globe, Arizona, the Peabody Museum at Harvard, and the Carnegie Institution of Washington, was working in the Peabody Museum when Dr. Hooton had the skull. At Dr. Hooton's suggestion, Dr. Woodbury took full measurements and made observations on the specimen. He prepared a memorandum, based on conclusions reached independently from those of Dr. Hooton, in which he states:

"The cranium known as *Homo novusmundus* is that of a man in early middle age (35–40) and there is little doubt of its being Indian in general physical appearance.

[101] Hooton, E. A., The Indians of Pecos Pueblo, a Study of their Skeletal Remains., Dep't. of Archeology, Phillips Academy, pp. 257–263, Andover (Yale Press), 1930.

[102] Hooton, ibid., pp. 355–356.

"The cranial vault is small, definitely dolichocephalic, and moderately high which is a combination of features that is not unusual among certain Indian tribes of the present day. The facial skeleton, on the other hand, has a more unusual conformation. The heavy brow-ridges and deeply depressed nasal root coupled with the short, wide prognathous face give it an appearance that is distinctly reminiscent of Australian aborigines. This type of face is also found among certain of the contemporary tribes of the southwestern United States and is usually described as 'Australoid.' The specimen at hand is a marked example of this Australoid type.

"A comparison with the collections in the Peabody Museum of Harvard University showed that the closest analogy in all features could be found only among the Paiute of Nevada and Utah. In these crania the same characteristics that distinguish *Homo novusmundus* are present although perhaps to a slightly less pronounced degree. There was a striking similarity between them.

"The paramastoid processes, which are highly developed in *Homo novusmundus* represent an individual anomaly without racial or diagnostic significance. The definite asymmetry of the skull may be traceable to this or to post-mortem earth pressure. It is not apparently due to reconstruction.

"The skull, although striking in general appearance, is not unique or particularly unusual *per se*. As evidence of early man in America it is only as good as the geology of the site where it was found."

Dr. Harry L. Shapiro, Associate Curator of Physical Anthropology at the American Museum of Natural History, prepared the following statement after studying the skull:

"I have examined the skull found in the bank of the Cimarron River, Union County, New Mexico, which Mr. J. D. Figgins has named *Homo novusmundus*, but except for a few measurements I have not attempted to carry out any extensive craniometric analysis. The few measurements I took reveal a discrepancy between those reported by Figgins and mine. On the whole, however, my impressions were mainly visual.

"The skull strikes me as being of a rather primitive facies with very well developed brow-ridge, constricted frontal area, permitting phenozygosity, well developed surface markings, fairly simple sutural patterns, extremely heavy mastoids, flat-sided vault, and with a not very highly developed nasal border. The mandible is correspondingly primitive. This characterization, however, applies to *Homo sapiens*. It does not imply a type more primitive than *Homo sapiens*. In fact, skulls of even more primitive character might easily be found among such living groups as the Australian aborigines and Melanesians.

"In conclusion, I find no justification for setting up a new species in which to house this skull. It does not fall outside the range of American Indians."

As far as the cranium and its place in North American skeletal remains is concerned, the conclusions of the four physical anthropolo-

gists cover the essential facts. It might be said in explanation of the discrepancies in measurements that two things contributed to such a condition. First, in the figures published by Mr. Figgins, actual measurements were not given. Instead, the average of the results obtained by three different individuals was used. The second was an accident in the laboratory after the first measurements were taken. Mr. Figgins had a cast made of the skull and, in removing the mold, the technician pulled off part of the facial structure. This was replaced as accurately as possible but in such repair work it is practically impossible to obtain a perfect fit; hence the likelihood of a slight change in dimensions.

Up to the present time there have been no independent reports on the geology of the site where the bones were found. The writer is unaware of any study of the deposits beyond that made by Mr. Figgins and included in his report. Since so much in the matter of age depends on the geology at the location, the conclusions of a number of specialists in that field are essential to a proper evaluation of the skull's significance from the time standpoint. Mr. Figgins endeavored to get several geologists to visit the site and pass an opinion on it but seemingly was unsuccessful.

From another angle, the find emphasizes a feature all too common in such cases: namely, that of removing material from its locale before trained observers have had an opportunity to study and carefully check every phase of the occurrence. If Mr. McKinley had left the bones *in situ* and notified Mr. Figgins of their presence, thus making it possible for him, as well as others, to see the remains actually in place, there would have been a stronger case for their supposed antiquity.

THE OCCURRENCE OF COILED POTTERY IN NEW YORK STATE

CHARLES FAIRBANKS[103]

THERE HAS been considerable discussion recently as to whether or not the coiling method was in use in the northeastern Woodlands area. There are two sources of information: early written reports of settlers, missionaries, and others, and archaeological material. Holmes[104] reports the observations of Mooney and Palmer among the Catawba, who used the coil method. Sagard, a French missionary, described the the Huron as using the paddle and anvil method.[105] Parker found a section of a coil in an Erie village in western New York,[106] and several partial sections have been found since. Griffin[107] summarizes the ethnological and archaeological evidence and describes his attempts to produce fractures along the lines of the coils. Little material on sherds showing horizontal breaks along the coils is available at the present. Some recent archaeological evidence relating to this subject may prove of interest.

During the construction of a Delaware and Hudson Railroad bridge across the Susquehanna River two and seven tenths miles above Bainbridge, New York, and the subsequent moving of farm buildings, several shallow pits containing pottery were exposed. These pits were sixteen inches in diameter, and contained small quantities of charcoal, burned stones, and pottery sherds. One pit contained two pots, the other only one. All three were badly broken. Two of these pots show definite fracturing along the coils.

One pot is dark brown with grit temper and cord-wrapped paddle decoration over the greater part of the outside. The temper is extremely plentiful, showing through both sides. This pot, with sharp conoidal base and slight flare in the rim, has been identified as Second Period Algonkian ware. There were no associated artifacts within the pit. The

[103] Department of Anthropology, University of Chicago.

[104] Holmes, W. H., Aboriginal Pottery of Eastern United States, 20th. Annual Report of the Bureau of American Ethnology, p. 54, 1903.

[105] Sagard, T. G., Histoire du Canada, Paris, p. 260, 1886.

[106] Parker, A. C., Excavations in an Erie Village and Burial Site at Ripley, Chautauqua County, New York, New York State Museum Bulletin 117, pl. 25, fig. 1, 2, and 3, 1907.

[107] Griffin, James B., Aboriginal Methods of Pottery Manufacture in the Eastern United States, Pennsylvania Archaeologist, Milton, Penna., Vol. 5, No. 1, pp. 19–24, April, 1935.

Sherds showing horizontal breaks along the coils.

Sherds showing horizontal breaks along the coils.

horizontal breaks are concave or convex and fit perfectly. The bottom portion shows regular horizontal rows of breaks, but the concave or convex fractures are less evident because of the great quantity of temper used. There is apparently no basal pat, the bottom sherd having a smoothly coiled surface less than one inch across.

The second pot is light reddish buff with several bluish-white, blotches, an indication of poor firing. Another evidence of poor firing is the black center seen in cross-section breaks. The temper is grit and shows through the surface in only a few places. The surface is relatively smooth and decorated with horizontal rows of stamped dots from the rim to the shoulder. The rim is laid on in a separate strip and decorated with diagonal right-to-left "corn-cob" stamped lines. About ninety-five per cent of these sherds show either concave or convex horizontal fractures. Some of the fractures are slanted either towards the inside or outside, indicating slippage before firing. Some of the coils clearly show finger impressions, giving a scalloped appearance to the edge. The coils are all less than one centimeter in height. The basal part can be seen clearly in one complete sherd. It is two inches across and shows a spiral coiling; thus indicating that it was not a round plate (as Holmes describes)[108] but a small spiral of clay. The pot shows, along one side, a line of marked weakness that may indicate the location of the joints of all the coils. With this pot were found two triangular points of dark flint, indicating perhaps a rather late Second Period Algonkian association.

The accompanying photographs (Plates 13–14) show the horizontal smooth fractures and the spiral coiling of the basal "pat." This material is offered as evidence of fracture showing coiling in Algonkian material from New York State. The author believes the fractures were caused by one or both of two possible factors. The pits were very shallow, from fourteen to sixteen inches deep. This would allow extreme frost action to affect the deposits and encourage a tendency toward fracturing along the lines of least resistance. Or the potter, perhaps because of peculiarities of the clay, apparently used a mechanical slip on each of the coils in turn, leaving a film of water between them to form a potential line of weakness. This is indicated by the very smooth surface of the horizontal breaks. However, such a technique might be a purely local or accidental development, not affecting the material for the whole region.

The author hopes that the information here presented will prove of interest not only to the students of New York State, but also to those concerned with the cultural affiliations of the eastern part of the country.

[108] Holmes, op. cit., p. 54.

THE ARCHAEOLOGICAL REMAINS OF THE CHIWERE SIOUX[109]

JAMES B. GRIFFIN[110]

IN THE NORTH central Middle West there is a well-defined complex of archaeological material traits that received the classificatory name Oneota aspect of the Upper Mississippi phase at the Indianapolis meeting of 1935. The material which probably should be grouped together occurs over quite a large geographical area. In northern Illinois it is one of the best known of the prehistoric cultures and is represented by at least three foci. In Wisconsin the southern and western parts of the state contain quite a number of sites grouped into three foci, two of which appear to be local, namely, Lake Winnebago and Grand River. The sites in northeastern Iowa and southeastern Minnesota contain remains so similar to those of southwestern Wisconsin that they have been placed together in the Orr focus.

Within the last few years the occurrence of recognized traits of the aspect in the following areas has made this one of the most important of midwestern archaeological cultures. In Iowa, sites are found in the Upper Iowa Valley and southward along the Mississippi, along the Des Moines, in the north central, and in the western parts of the state. The Blue Earth Valley of Minnesota has yielded enough surface material to make it clear that this region was occupied at one time by Oneota peoples. In northeastern Kansas and in southeastern Nebraska various field workers have found material that is very similar to the artifacts belonging to the Orr focus. In an unpublished manuscript at Harvard University, Stearns describes the results of his excavations along the Missouri River above Kansas City and tends to link the Oneota type of material with one of the Dhegiha Sioux bands.

In Bulletin 37, Bureau of American Ethnology, Gerard Fowke describes a site in central Missouri which seems to be an Upper Mississippi site. While in Washington, D. C., this spring I examined the pottery from this site; its resemblance to that of the Orr focus is very striking. The pottery from all the sites I have mentioned is more uniform than that which comes from Iroquoian sites in western and eastern New York.

---

[109] Read before Section H. of the A.A.A.S. meeting in Rochester, New York, June, 1936.

[110] Ceramic Repository, University of Michigan, Ann Arbor, Michigan.

The migration legend of the Chiwere Sioux contains information regarding the movement of an historic people which furnishes, I believe, the identification of the people who were responsible for the Oneota aspect. Briefly, this legend, as given by the Iowa, Oto, and Missouri, states that just preceding historic times these tribes were located near their linguistic cousins, the Winnebago, in Wisconsin and in nearby Minnesota. Gradually the Iowa, Oto, and Missouri moved westward and the Winnebago were left as a Chiwere island in a sea of Algonkian-speaking peoples. The Oto are known to have lived in the Blue Earth region of Minnesota in 1634, and slightly later on the Des Moines River in Iowa. Shortly after 1700 they established themselves with the Iowa near the Omaha division of the Dhegiha Sioux. The Iowa, who were the first to move westward, were formerly located in northeastern Iowa and southwestern Wisconsin. The Missouri apparently occupied the northern and eastern half of Missouri about 1687, for one of their chief villages was at the mouth of the Grand River. They, too, moved farther westward but not until the latter part of the eighteenth century.

W. C. McKern is of the opinion that the archaeological remains called Lake Winnebago were left by the Winnebago tribe, and agrees with Dr. Keyes in identifying the Orr focus with the Iowa tribe. On purely archaeological grounds, the sites of the Oneota aspect in Wisconsin are later than those of the Hopewellian phase, and later than many of the Woodland components. In Iowa, Keyes has found definite stratigraphy in the last few years that proves that the Orr focus is intrusive into Woodland components. It is an early historic culture because trade material has been found with it.

It is fairly obvious that this connection between the known areas occupied by the historic Chiwere Sioux and the archaeological culture called the Oneota aspect is of such a nature that there is a high probability of direct correlation. One of the most important pieces of archaeological work in the Middle West is to identify known Chiwere components in Missouri, Kansas, Nebraska, and western Iowa, and to determine the amount of similarity of their materials with those from the sites in Wisconsin and northeastern Iowa.

CULTURE INFLUENCES FROM OHIO IN NEW YORK ARCHAEOLOGY[111]

WILLIAM A. RITCHIE[112]

IN THE COURSE of its long and eventful prehistory, the territory embraced in the present state of New York was invaded from nearly every direction. For several groups, notably the Iroquois, it was the end of the trail; others sojourned briefly and passed on. In part it was heavily occupied by diverse bands for a considerable period of time. This is especially true of the central and southern sections and of large parts of the Genesee Valley. The latter and the Finger Lakes region, including the Seneca River, are thickly strewn with sites of varying age and size. In one section of the Genesee Valley, just south of Rochester, hardly a knoll is opened without revealing skeletons. Other relatively intensively occupied areas are the Susquehanna drainage, parts of the Mohawk and Hudson valleys and Long Island.

The earliest definite occupation of New York is termed the Lamoka focus of the Archaic pattern, a pre-horticultural, pre-ceramic, hunting and fishing culture, propagated by a "non-Mongoloid" folk who entered from Ontario through the Niagara Peninsula.[113]

Another apparently early pre-ceramic manifestation is the still obscure Ground Slate phase with its distinctive ulu and slate point, which is widely disseminated over Lower Ontario, New England, the Maritime Provinces of Canada, and Labrador. It is strongly represented in northern and north central New York, having come up the St. Lawrence from the northeast.[114] Its chronological relation to the culture sequence is still hypothetical.

Migration northward up the coast and inland, through the great river courses from the region of Chesapeake Bay, introduced a culture

[111] Based on a paper read before Section H, A.A.A.S., at Rochester, June 17, 1936.

[112] Assistant Archaeologist, Rochester Museum of Arts and Sciences, Rochester, N. Y.

[113] Ritchie, William A., New Evidence Relating to the Archaic Occupation of New York, Researches and Transactions of the N. Y. State Archeological Assn., Vol. 8, No. 1, Rochester, 1936.

[114] Parker, Arthur C., Archeological History of New York, Pt. 1, N. Y. State Museum Bull., No. 235, pp. 79–83. Cf. Strong, A Stone Culture from Northern Labrador and its Relation to the Eskimo-like Cultures of the Northeast, American Anthropologist, N. S., Vol. 32, No. 1; and Willoughby, Antiquities of the New England Indians, Peabody Museum (Harvard), pp. 6–80.

facies characterized by broad-bladed projectile points of argillite, rhyolite, quartzite, chert, and jasper; grooved axes; gorgets; the winged bannerstone, often notched; steatite vessels; and rude straight-sided, pointed-bottomed, cord-marked pottery as the chief traits. In its mature state, this became the Coastal focus of our present terminology.

A related manifestation is the newly discovered Orient focus which is taking shape through the explorations of Messrs. Roy Latham and Charles F. Goddard on eastern Long Island. This steatite-bearing culture, with its gorgets and notched projectile points with fish-tailed base, is apparently directly derived from Connecticut across the Sound.

On stratigraphic grounds, we have next in New York State a complex influx from the region of the upper Great Lakes and Ohio which is the subject of this paper.

Following this came another wave of population from the southeast, chiefly up the Susquehanna, and almost certainly related to the historic Algonkin tribes of the upper middle Atlantic coast. This constitutes the Owasco aspect, with its two foci, whose contents have been well established by our investigations.[115]

Finally, the coming of the Iroquois from the south, southwest, and north[116] terminated the intermittent prehistoric migrations into the state.

Returning now to our primary purpose, an analysis of the western influences in New York archaeology, we must first consider the most unequivocal and probably the oldest, namely the New York focus of the Elemental aspect, Hopewellian phase, as this manifestation is expressed in terms of our application of the McKern classificatory system. The best component is situated on Squawkie Hill, near Mt. Morris, in Livingston County. Here on a high plateau above the Genesee River are the remains of a mound reported to have been some thirty feet in diameter and four feet high when originally dug into by the owner about 1907.[117] According to the eyewitness account cited, it had

[115] Parker, Arthur C., op. cit., pp. 340–343. Cf. Ritchie, William A., An Algonkin-Iroquois Contact Site on Castle Creek, Broome County, N. Y., Research Records of the Rochester Municipal Museum, No. 2, 1934; also, Ritchie, A Prehistoric Fortified Village Site at Canandaigua, Ontario County, N. Y., same series, No. 3, 1936.

[116] Reference is here made to the Mohawk-Onondaga-Oneida group which split from the Huron and crossed the St. Lawrence into Jefferson and St. Lawrence counties. See Parker, Arthur C., The Origin of the Iroquois as Suggested by their Archaeology, American Anthropologist, Vol. 18, pp. 479–507, 1916.

[117] Crofoot, Fred H., in: History of Livingston County, N. Y., edited by Lockwood R. Doty, pp. 590–593, Jackson, Michigan, 1905.

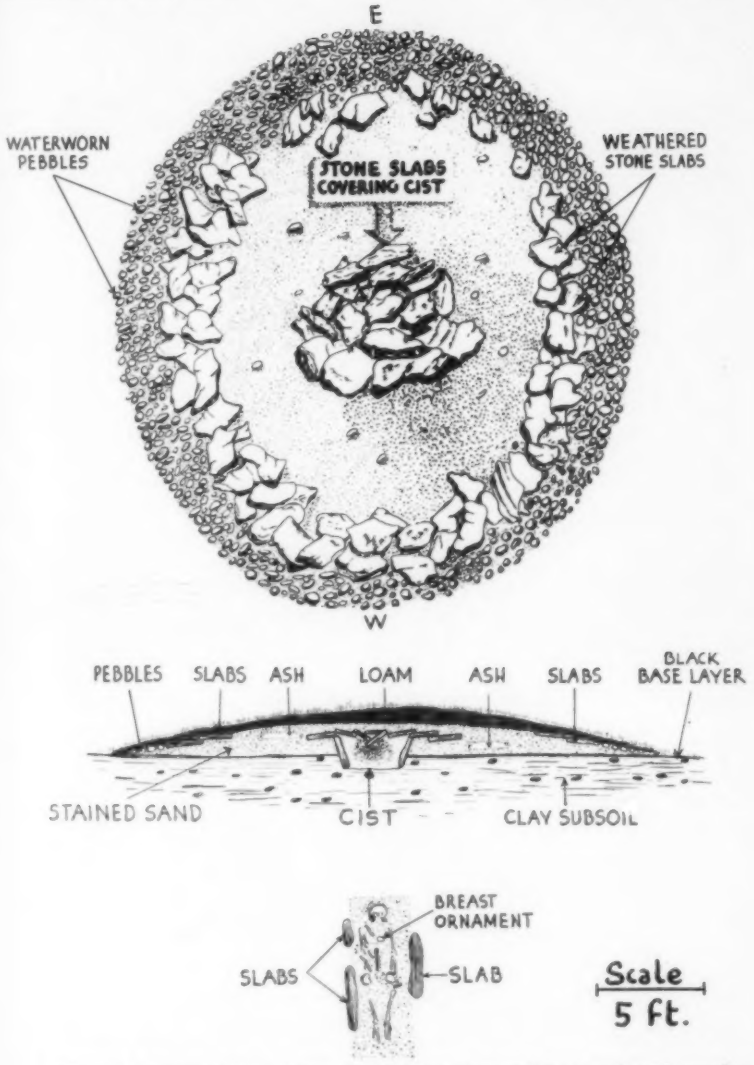
a laminated structure, and the outer covering, more than one foot in thickness, was of gravelly loam. Beneath this lay a sheathing of large water-worn pebbles laid in fine sand, which in turn capped a two-foot zone of gravelly soil mixed with ashes, charcoal, refuse animal bone, and black camp dirt. This was separated from a similar layer beneath by a six-inch stratum of tough blue clay. The floor consisted of the natural clay subsoil, indurated and discolored by fire. Five burials are said to have been found, two enclosed in separate stone cists, and three grouped together in the refuse layer under the stone casing. The grave goods consisted of seventy-eight baroque pearl beads, 780 small disk shell beads, two flake knives of pink Flint Ridge chalcedony, a quartz crystal, a curved-base monitor pipe of Ohio fireclay or pipestone, and a double-cymbal copper ear-plug.[118]

In 1930 the writer, assisted by Mr. John H. Bailey, reëxamined the mound, then reduced by plowing to a maximum height of two feet, nine inches. All the structural features described were verified, but the original diameter was determined from the extent of the stone covering, to have been fifty-seven rather than thirty feet. Two notched arrow-points and a chalcedony flake knife, identical with the first recovered specimens, were found on the floor under an undisturbed section.

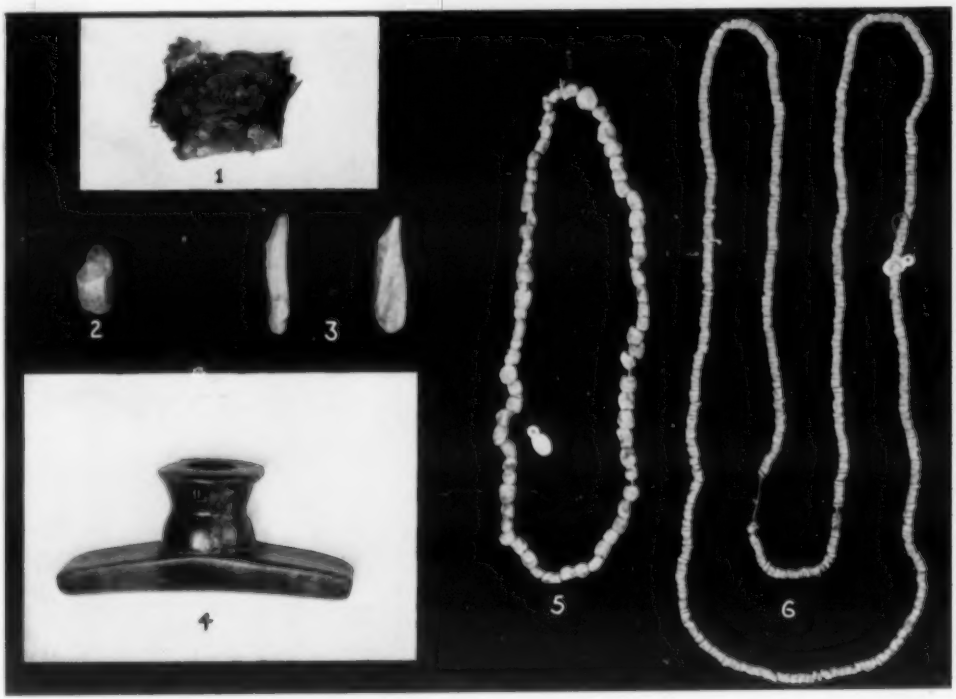
Highly significant new evidence linking this station with the Hopewell of Ohio was obtained early in June, 1936. Assisted by John H. Bailey and J. Sheldon Fisher, the writer explored a low untouched mound which he had located forty-five feet south of the excavated tumulus (Plate 15). It had been well plowed down and had escaped discovery, the field being continuously in alfalfa. Upon excavation, the east-west diameter proved to be twenty-eight feet, nine inches; the north-south diameter, twenty-six feet; and the present maximum depth at center, one foot, eleven inches. The capping layer was of clay loam, but the main body of the mound consisted of sand brought from the hills half a mile to the west. Throughout the sand were streaks of ash and charcoal containing refuse animal bone, flint chips, an oval flint scraper, a cache blade, and a few coarse, fabric-marked potsherds. It is not certain whether this industrial material pertained to the builders or was scooped up incidentally from an older site in the sand hills.[119] The shoulder for two feet was reinforced with a platform of round river pebbles about the size of a large orange, bordered on the inside by a tier of flat overlapping stone slabs, three feet in breadth. In a central

[118] Probably the second of a pair of these was thrown out without notice.

[119] See footnote 140.



Mound 2, Squawkie Hill. Upper drawing, top view with loam and sand covering partly removed; center drawing, profile view across center from north to south; lower drawing, burial.



Artifacts from Hopewellian Mounds on Squawkie Hill. 1, wooden breast ornament covered with sheet copper and silver; 2, quartz crystal; 3, chalcedony flake knives; 4, curved base monitor pipe; 5, pearl beads; 6, shell disk beads. 1 is from Mound 2; the others, from Mound 1. 5 is 4 5–8 inches in length.

cist, sunk eight inches into the floor, lined and covered by thirty-five heavy slabs of limestone, sandstone, and shale from the neighboring river gorge, lay an extended adult female skeleton heading east (Plate 15). The only accompanying articles were what appeared to be the partially decomposed teeth of a bone comb, placed beneath the knees, and a rectangular breast ornament, two by two inches, fashioned from a thin piece of wood enveloped in an inner layer of sheet copper and an outer covering of sheet silver (Plate 16, 1). Nothing of this kind has ever before been reported from New York, but it would be a commonplace in an Ohio Hopewell mound.

About one hundred rods southwest, according to the above informant, workmen drawing sand, in 1899, opened a mound wherein, seven feet from the surface, they uncovered a burial accompanied by a curved-base monitor pipe, two gorgets, a native copper axe, and about eighty spearheads and arrowheads. Nothing further is known about these, but the specimens from the first mentioned mound, excepting the copper ear-plug, which is in the State Museum at Albany, were recently acquired from the daughter of the finder by the Rochester Museum (Plate 16, 2–6). Both Shetrone, who personally examined them, and Greenman, who was shown a photograph, declared them typical Hopewell artifacts.

Identical knife flakes, pipes, shell and pearl beads, and ear-plugs are illustrated in Shetrone's report on the Hopewell Mound group. Wooden button-like objects, covered with sheet copper and silver, were also found in considerable numbers.[120]

Stone-lined graves, too, were found in mounds of the Hopewell[121] and Turner[122] groups. Complete stratification is recorded for the Turner and Mound City groups, and a covering of stone and gravel was noted in five of the six major groups explored by the Ohio State Museum.[123]

There can be no doubt that this complex in New York represents a pure importation *in toto* from Ohio. Other burial mounds and adjacent village sites in southwestern New York, all dug by laymen, are said to have produced similar traits,[124] but we must conclude that Hopewell

[120] Shetrone, H. C., Exploration of the Hopewell Group of Prehistoric Earthworks, Ohio Archaeol. and Hist. Quarterly, Vol. 35, No. 1, pp. 131, 144–145, 151–152, 167, 170, 1926.

[121] Shetrone, H. C., The Mound Builders, p. 198, Appleton, 1936.

[122] Willoughby, Charles C., The Turner Group of Earthworks, Hamilton Co., Ohio, Papers, Peabody Museum of American Archaeol. and Ethn., Harvard, Vol. 8, No. 3, p. 14 ff., 1922.

[123] Shetrone, H. C., Exploration of the Hopewell Group, p. 222.

[124] Parker, Arthur C., op. cit., p. 87 ff.

and silver; 2, quartz crystal; 3, chalcedony flake knives; 4, curved base monitor pipe; 5, pearl beads; 6, shell disk beads. 1 is from Mound 2; the others, from Mound 1. 5 is 4 5–8 inches in length.

evidences in New York are very rare and sporadically distributed, mainly over the western half of the state.

Still scantier traces attributable, perhaps, to the Adena aspect, are discernible. According to Greenman's analysis of this as yet imperfectly defined culture, the tubular pipe with one end partly blocked is a characteristic trait.[125] At least six of these, made of limestone, accompanied flexed burials in a gravel knoll at Vine Valley in Yates County, on the east shore of Canadaigua Lake. Parker rescued finds already made there by gravel diggers, and completed the excavation for the State Museum in 1923.[126] In addition to these tubes, the burials yielded the notched projectile point; pendant; gorget, plano-convex adze; bar amulet; copper celt, awl, and bead; tubular and spheroidal marine-shell beads; the pottery pipe with bowl and stem meeting at an obtuse angle; and coarse grit-tempered, fabric- and cord-marked pottery with straight sides and conoidal bottom.

Tubes of this Adena type are also recorded from burials in central and eastern New York. Sometime during the last half of the nineteenth century, two skeletons accompanied by three tubes, arrowpoints, powdered hematite paint, and other articles not enumerated,[127] were dug up near Amber on Otisco Lake, Onondaga County. Other early finds include a burial (c. 1899) near Hoffmans, Schenectady County, with which were a blocked-end tube and four large, double-pointed knives of blue flint;[128] a cemetery site (1899) near Scotia, Schenectady County, where several tubes — two of them engraved, one or more copper celts, copper and shell beads, and boatstones were recovered with flexed skeletons;[129] and a large cemetery (c. 1879) near Palatine Bridge, Montgomery County, also in the Mohawk valley, partly destroyed in railroad construction. From seven remaining graves Mr. L. S. Frey removed five tubes of the type under discussion, a copper awl, one hundred and eighty-nine triangular arrowpoints, three double-pointed knives of blue flint — like those found at Hoffmans, a bone gouge,

[125] Greenman, Emerson F., Excavation of the Coon Mound and An Analysis of the Adena Cultures, Ohio Archaeol. and Hist. Quarterly, Vol. 41, No. 3, p. 454, 1932. Cf. Satterthwaite, Linton, Jr., Excavation of an Indian Mound at Beech Bottom, The Museum Journal, Vol. 21, Nos. 3–4, Univ. of Pa., 1930.

[126] Parker, Arthur C., op. cit., p. 92.

[127] Beauchamp, William M., Polished Stone Articles Used by the New York Aborigines, Bull. of N. Y. State Museum, Vol. 4, No. 18, pp. 52, 54, Albany, 1897.

[128] From an account in the Amsterdam (N. Y.) Semi-Weekly Democrat, June 7, 1899, verified by Mr. Percy M. VanEpps of Schenectady, N. Y., its author.

[129] Information furnished by Mr. John Swart of Hoffmans, N. Y.

many conch-shell, copper, and Marginella beads, red ochre, and a graphite paint stone.[130]

At Stillwater, also in eastern New York, and at the foot of Grindstone Island in the St. Lawrence River, Jefferson County, in northern New York, such tubes have been plowed or washed to the surface.

Willoughby[131] illustrates a number from New England, the three most notable discoveries having been made at Holyoke, Massachusetts, and at Swanton, and Orwell, Vermont. At and near the former locality, twenty-one graves were opened in 1868, from which came blocked-end tubes, a bar amulet, copper and shell beads, a copper awl, two steatite cooking pots, and chipped flint knives.[132] Still more important was the Swanton cemetery in northern Vermont, described by Prof. George H. Perkins. Here in about 1861, at least twenty-five burials were uncovered and the following grave goods obtained: ten or twelve tubes, Marginella and conch-shell beads, copper beads, copper awls, birdstones, bar amulets, boatstones, slate pendants and gorgets, a discoidal stone, celts, and chipped knives.[133] Since 1933, Olsen, excavating on Lake Champlain, near Orwell, Vermont for the Museum of the American Indian, Heye Foundation, has discovered a considerable number of these tubes, again associated with the birdstone, bar amulet, copper and marine-shell beads, a copper awl and celt, notched and triangular projectile points, powdered hematite paint, rude Woodland-type pottery, and other artifacts.[134]

This repeated occurrence over a wide territory of the blocked-end tube in company with the birdstone, bar amulet, boatstone, gorget, pendant, copper bead, awl, and celt, tubular and spheroidal conch-shell and Marginella beads, double-pointed flint knife, hematite, and cord-marked pottery vessel with pointed bottom is a fact of extreme importance in the archaeology of the northeastern area and will be considered more analytically in a subsequent paper.

This complex as a whole is not Adena, and it is still uncertain whether .stinctive blocked-end tubular pipe is a diagnostic trait borrowed a this aspect or a linked trait common to two or more possibly related aspects.

[130] Frey, S. L., The American Naturalist, Vol. 13, pp. 637–644, 1879.

[131] Willoughby, Charles C., op. cit., pp. 92–99.

[132] Ibid., pp. 83, 84.

[133] Ibid., p. 85.

[134] Ibid., pp. 85, 86. Also from a personal account by Mr. Olsen and an examination of part of the material.

Next to the Hopewell, the most clearly marked western influence in New York is the so-called Intrusive Mound Culture of Mills. First noted by Squier and Davis in 1846, in the Mound City group, it has subsequently been found in the Heinisch and Hilltop mounds at Portsmouth, and the Greenlawn Mound at Columbus, Ohio. The best data, however, were obtained by Mills and Shetrone who uncovered thirteen intrusive burials at Mound City, missed by the Squier and Davis survey.[135]

Mills has listed eight diagnostic traits of this culture: the chipped and polished flint celt (Figure 7: 4), large conchoidal hornstone scraper, straight-based monitor pipe (Figure 7: 6), large antler tool handle (Figure 7: 3), antler comb (Figure 7: 11), mallet or hammer of elk antler, large, prominently barbed harpoon (Figure 7: 1), and hafted beaver-incisor engraver (Figure 7: 2). Additional grave goods with the single extended and flexed, and multiple flexed burials included: barbed and triangular arrowpoints (Figure 7: 7–9)—sometimes with angular edges (Figure 7: 10), single-holed gorget or pendant, granite and nephrite celts (Figure 7: 5), antler arrowpoint, bone and antler flaking tools, bone awl, bone bodkin or needle, deer-metapodial scraper, large cylindrical marine-shell bead, and an undescribed pottery vessel. From the Heinisch Mound came a large human-face effigy or mask of sandstone and a double-pointed pick or bar celt, which Mills thinks may be characteristic objects.

Burial sites, productive of a large proportion of both the diagnostic and linked traits enumerated from Ohio, have been opened in New York, especially in Jefferson County, at the foot of Lake Ontario. The chief instances are: a stoned-up grave containing fifteen skeletons, dug by a farmer some thirty years ago on the west shore of Chaumont Bay; a group of nine single graves and an ossuary holding the dissociated remains of ten individuals, found in the rock-covered crevices of a limestone knoll on Pt. Peninsula, about three miles distant from the first mentioned ossuary, by Mr. John B. Nichols; four ossuary burials, one eighth of a mile distant, holding a total of eighty-five fragmentary skeletons, also excavated by Mr. Nichols;[136] and a multiple and single grave discovered a few rods removed from these, by Mr. Nichols and the writer.

---

[135] Mills, William C., Exploration of the Mound City Group, Ohio Archaeological and Historical Quarterly, Vol. 31, No. 4, p. 563 ff., 1922.

[136] Nichols, John B., Notes on Rock Crevice Burials in Jefferson County at Point Peninsula, Researches and Transactions of the N. Y. State Archeological Assn., Vol. 5, No. 4, Rochester, 1928.

The presence of deterministic elements in common in each of the three burial places suffices to relate them beyond cavil. Analysis of the content shows the following traits in common with the Intrusive Mound Culture of Ohio: the straight-based monitor pipe (Figure 8: 6); large

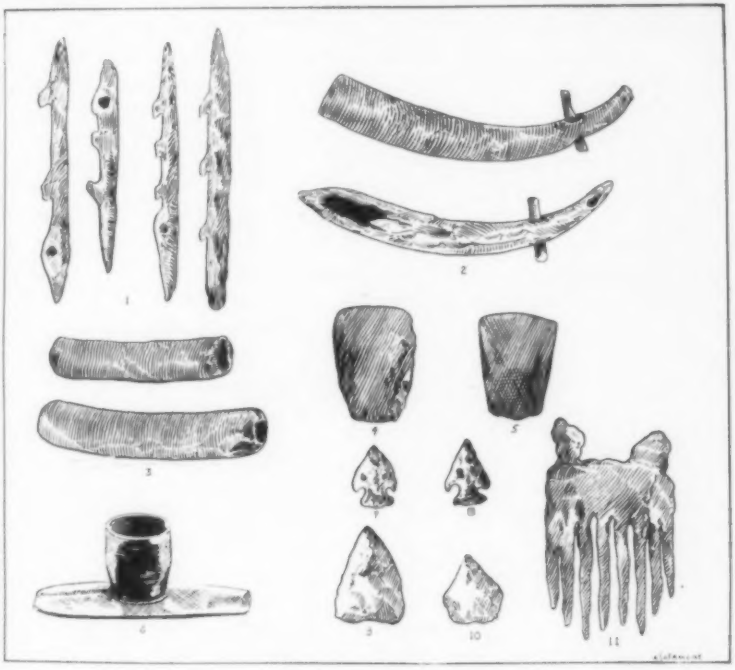


FIG. 7.—Artifacts from the Intrusive Mound Culture in Ohio. 1, harpoons; 2, hafted beaver-incisor engravers; 3, antler tool handles; 4, flint celt; 5, jadeite celt; 6, straight-based monitor pipe; 7–8, notched arrowpoints; 9–10, triangular arrowpoints; 11, antler comb. All from Mound City excepting 5, which is from the Hilltop mound. Reproduced with permission from the Ohio Archaeological and Historical Quarterly, Vol. 31, No. 4. The upper object over 2 is 9 inches in length.

antler tool handle (Figure 8: 3); large, prominently barbed harpoon (Fig 8: 4); hafted beaver-incisor engraver (Figure 8: 5); barbed and triangular arrowheads (Figure 8: 14–17), some with angular edges (Figure 8: 15); antler arrowpoint; one-holed gorget or pendant; antler flaking tool; granite and nephrite celts (Figure 8: 12–13); and pottery. As will be noted, the first four constitute half the diagnostic traits

listed by Mills, and these coexist with all but two of the linked traits present in Ohio, including such significant artifacts as the barbed arrowpoint with angular edge and the nephrite or jadeite celt, found in no other New York culture, to the writer's knowledge. Another link of

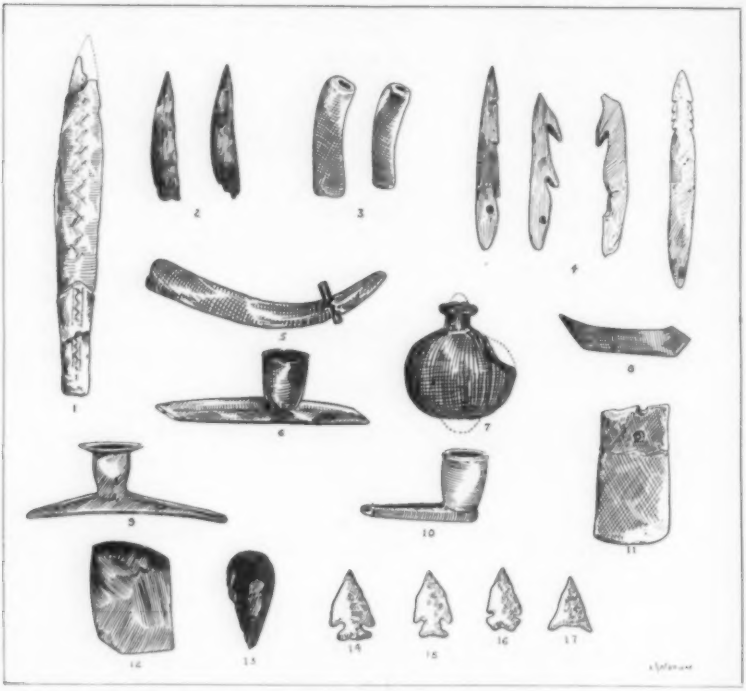


FIG. 8.—Artifacts of the Pt. Peninsula focus. 1, bone dagger; 2, antler war-club points; 3, antler tool handles; 4, harpoons; 5, hafted beaver-incisor engraver; 6, straight-based monitor pipe; 7, birdstone of oval type; 8, birdstone of bar type with head broken off; 9, curved base monitor pipe; 10, stone pipe with bowl and stem at right angles; 11, gorget; 12, jadeite celt; 13, jadeite scraper; 14–16, notched arrowpoints; 17, triangular arrowpoint. 1–3, 5–8, 10, 14–17 from multiple burial on west shore of Chaumont Bay, Jefferson County, N. Y. 4, 9, 11–13 from burials on Pt. Peninsula, Jefferson County, N. Y. 1 is 15″ in length.

major importance is the inclusion among the grave goods, in nearly every case, in both Ohio and New York, of unworked or slightly worked pieces of bone and antler, the raw material for implement manufacture.

Ohio traits absent from the Pt. Peninsula congeries are the flint celt, large hornstone scraper, antler comb,[137] mallet or hammer of elk antler, deer-metapodial scraper, and bone bodkin or needle. Conversely, the Pt. Peninsula burials produced some fourteen types not reported from Ohio. These include: the plano-convex adze; two-holed gorget (Figure 8: 11); birdstones of two forms (Figure 8: 7–8); curved-base monitor pipe (Figure 8: 9); stone tubular pipe, not, however, of the blocked-end type; stone pipe with bowl and stem meeting at right angles (Figure 8: 10); shark-tooth pendant; large bone dagger (Figure 8: 1); antler war-club spike (Figure 8: 2); perforated canine teeth of bear and wolf; Marginella and Olivella shell beads; shell disk beads; cylindrical copper beads; and hematite, graphite, and limonite paint stones. The potsherds, derived from straight-sided, pointed-bottomed vessels, are heavily ornamented in simple rectilinear patterns impressed with a toothed stamp. Since no description is given by Mills of the vessel found at Mound City, a comparison is precluded.

Some differences as well as resemblances exist, too, between the mortuary traits in New York and Ohio. Four of the ossuaries explored by Mr. Nichols held partially cremated human bones. Mills did not find this in Ohio. His extended skeletons from Mound City intrusive graves cannot be duplicated here, but single and multiple flexed interments occurred in both places. Another parellel is observable in the selection of burial places, a previously existing mound in Ohio[138] and a small, natural, mound-like knoll in New York.

Jefferson County is not the sole New York locality where this culture has been encountered. At the foot of Cayuga Lake, near the Rene Menard bridge, an amateur collector dug out seven burials with a large assortment of grave goods, including a hafted beaver-incisor engraver, harpoons, flaking tools, marine-shell beads of several varieties, copper beads, triangular and notched arrowpoints, and obtuse angle pipes of stone and clay. Many of the graves contained the characteristic deposits of split sections of bone and antler.

Near West Rush, Mr. Charles Wray and the writer found thirteen flexed and bundle burials, accompanied by the same type of hafted beaver-tooth implements, notched points, a two-holed gorget, copper beads, a pottery tubular pipe, and raw material for bone implement

[137] This is present in other New York sites of this focus, as will presently be noted.

[138] The evidence from the Heinisch and Hilltop Mounds at Portsmouth suggests that mounds were sometimes constructed. This is strengthened by Hinsdale's finds in Michigan (see footnote 139).

manufacture. Mr. Wray also discovered on a nearby farm a single semi-seated skeleton covered with red hematite. Among the eleven articles occurring in the grave, exclusive of seven pieces of unbroken and partially reduced bone and antler, were three types enumerated by Mills as deterministic in the intrusive graves: a hafted beaver-tooth engraver, an antler comb, and two harpoon points. Of his linked traits there were present four large antler flaking tools.[139]

Analysis of the foregoing data demonstrates that the Adena and Intrusive Mound cultures in New York do not exist in the pure segregated manner characteristic of the Hopewellian at Squawkie Hill.[140] Both are clearly interfused with an older occupation: the Vine Valley

[139] The Intrusive Mound Culture is also present without doubt in Michigan. In 1928, Hinsdale discovered at West Twin Lake, Montmorency County, below the base of a mound, a flexed skeleton with the following grave goods: "Above, eight inches from the right shoulder, a pot which has been fractured by ground pressure was removed. The pot, after reconstruction, has the dimensions of four inches across the rim, six and a half inches through the bulge and seven inches in height. It appears to be of the type usually classified as 'Algonquin.' It contained fifteen beautifully chipped chert arrows and one small chert knife, an arrow point of hollowed out antler tip which I sometimes designate as a 'thimblepoint,' two two-holed slate gorgets; and two peculiar implements made by the insertion of beavers' teeth through perforations in a prong of deer's horn. There was close by, also, a black clay pipe with massive stem. The height of the pipe barrel from the base is two inches; the length of stem projecting beyond barrel, two and one-half inches. Four bone harpoons with barbs upon one side and a hole through the base of each and a few slate objects that had been greatly damaged by fire were found near the right shoulder of the skeleton." From Reports of Archaeological Field Work in the Summer of 1928 in Montmorency, Newaygo and Lake Counties, Michigan, Papers of the Michigan Academy of Science, Arts and Letters, Vol. 12, pp. 127–128, Plates 32, 33, 1929.

[140] This account was written and submitted in June, 1936. In the following October, a second and larger mound (diameter 42 feet, height 3 feet) was discovered six miles north of Squawkie Hill on the opposite side of the river near Geneseo. The presence of 2 platform pipes and 29 Flint Ridge chalcedony flake knives links it culturally with those herein described. In the central tomb, which consisted of a heap of small boulders over a series of horizontal shale slabs covering the flexed skeleton of a child; with a second flexed burial on the same level; and also everywhere in the mound fill, were found both Hopewellian and Vine Valley industrial traits. The former embraced the pipes and knives already mentioned, together with a large conch-shell container. The latter included over 100 notched, straight-stemmed, and semi-lozenge shaped projectile points, mostly of thick, broad-bladed form; cache blades; large triangular knife blades; drills; and stemmed scrapers, all of local drab chert; a fragmentary yellow jasper blade; a complete point of this eastern Pennsylvania material; half of an ellipsoidal steatite gorget; a rectangular slate gorget; a plano-convex adze; two celts; a so-called "bolasstone"; a rubbed hematite paint stone; three pitted hammerstones; a plain pottery pipe of obtuse-angle type; about a dozen thick, fabric-marked sherds of poorly levigated pottery; half a vessel of this ware,

aspect, Northeastern phase, Woodland pattern, in terms of our classification, which seems in general to equate with Willoughby's Old Algonquian in New England. With regional variations, this is widespread over the entire northeastern area from the Upper Great Lakes to the Atlantic and from Ontario at least to southern Pennsylvania. The writer agrees with Parker[141] and Willoughby[142] as to its basic western derivation, and believes that it became subsequently intermixed with the previously mentioned earlier culture influx from the southeast. The principal traits of the Vine Valley aspect, as determined from some eleven well known New York village and burial sites, are: notched and triangular projectile points; the gouge; grooved axe; gorget; bannerstone; bar amulet; boatstone; birdstone; tube of uniform bore; plummet; pipe with bowl and stem meeting in a right or obtuse angle; harpoon; fishhook; grit tempered, fabric- or cord-marked and punctate ornamented ware, with straight sides and conoidal base; steatite vessel; marine-shell beads of various types; copper beads; rare copper spearheads, knife blades, and celts; hematite, graphite, and limonite pigments; the dog; cannibalism; flexed single and multiple burials; secondary or bundle burial; rare ossuary burial; and the presence of grave goods with about half the burials.[143]

On the basis of the Ohio influences apparent in this old Vine Valley aspect, two foci have been differentiated: the Middlesex, with apparently faint Adena traces; and the Pt. Peninsula, which exhibits strongly marked and intrinsically absorbed elements of the Intrusive Mound Culture of Mills.[144]

---

having a pointed bottom, mildly constricted neck, straight rim, and coarse punctate decorations; parts of four steatite cooking pots; and a native copper awl or punch.

This find establishes the contemporaneity of the similar non-Hopewellian and the Hopewellian traits recovered in both of the Squawkie Hill mounds, and leads to the conclusion that this culture focus, as well as the Middlesex and Pt. Peninsula foci described in this paper, was an intrusion into the older Vine Valley horizon in New York.

[141] Parker, Arthur C., op. cit., pp. 49–50.

[142] Willoughby, Charles C., op. cit., pp. 81–82.

[143] Almost certainly with the progress of excavation and analysis most of these traits will be specifically allocated to foci already recognized and to others which must be created. The aspect, phase and pattern concerned remain still the least adequately defined in our sequence.

[144] Note that the Hopewell intrusion into the Vine Valley aspect is not described as a focus of this aspect, but because of its fundamental relationship with the Hopewellian phase, is classed as a subdivision thereof, as stated on page 183. See, for clarity, the Table of Classification of Aboriginal Cultures of New York State, in the Foreword to the writer's monograph, listed as the last reference under footnote 115 of this paper.

In considering the craniological character of the people of the Vine Valley aspect, exclusive of the Orient and Coastal foci,[145] it is possible from the writer's study of over two hundred New York crania, of all culture groups,[146] to comment emphatically upon their marked differentiation.

Treating here only the adult males, of which eleven perfect examples exist, the measurements reveal prevailing mesocephaly (some are frankly brachycephalic), the mean cephalic index being 78.4 (range 72.2–85.0; average deviation 3.1).[147] In nearly all cases this is combined with a vault of medium height or orthocephalic (mean height-length index 73.4, range 70.0–77.8; average deviation 2.2); a broad low or chamaeprosopic face, the upper facial index having the borderline value of 50.0 (range 44.8–55.7; average deviation 3.5); orbits rectangular in shape and of medium size, or mesoseme (mean orbital index, 79.5; range 73.1–86.5; average deviation 3.6); and a nasal index almost uniformly platyrrhine, or broad (nasal index, 51.7; range 46.9–59.1; average deviation 2.5). The cranial capacity averages 1498 c.c., the highest for any New York group.

For affinities with this type one must apparently turn to the west of the New York area. According to Dixon[148] and Hrdlička,[149] a similar craniological type is found among the Ojibwe and certain Siouan tribes, notably the Ponca. What significance, if any, this fact of distribution may have, the writer is not prepared to say.

---

[145] Only cremated remains have been found in the graves of the Orient focus. The five male crania of the Coastal focus available to the writer all are dolichocephalic and otherwise at variance with the type described.

[146] This analysis is embodied in a recent and as yet unpublished paper, entitled: Craniological Correlations with Aboriginal Cultures in New York.

[147] One example only is dolichocephalic.

[148] Dixon, Roland B., The Racial History of Man, pp. 428–430, Scribner's, N. Y., 1923.

[149] Hrdlička, Aleš., Catalogue of Human Crania in the U. S. National Museum Collections, No. 2631, pp. 50–78, Wash., 1927.

NOTES ON ARCHAEOLOGICAL SURVEYS

DACHE M. REEVES[150]

The interest in American antiquities has increased in the last few years. One result of this increased interest has been the preparation of archaeological surveys of states and lesser areas. These surveys are of great value in organizing the available knowledge and in furnishing data for future studies and explorations.

In order for such publications to be of maximum usefulness, it is necessary that the locations of sites be fixed with accuracy. A description is not a survey. Such expressions as "near Springfield" or "six miles south of Jonesville" are entirely too vague. This is especially true in areas such as the Scioto Valley in Ohio where there is a large number of earthworks. Nor is the name of the owner of the land sufficient information as to the position of a site. Land ownership may change, and a geographical designation is needed.

Anyone who has attempted to plot archaeological sites on a map from data derived from publications has found it necessary to devote considerable time and effort to the identification of sites. Even with personal reconnaissance it is sometimes impossible to locate an earthwork because of the scanty information given.

Another source of confusion has been the practice of re-naming or re-numbering sites without making any reference to the designations already used in literature. This forces a reader to search through other publications in order to discover that the site being discussed is identical with one already mentioned by a previous writer.

A few suggestions may be in order. The first requisite of a survey is to fix the geographical location. This should be stated clearly in surveying terms, or better yet, should be shown accurately on a map. *Ancient Monuments of the Mississippi Valley*, by Squier and Davis, is a model in this respect, considering the unfavorable conditions under which the authors worked. It is seldom difficult to find the exact location of any site which they described. At the present time, a large part of the United States has been mapped and these maps are procured readily from the States Geological Survey and other sources. Hence it is easy to secure a suitable map on which to trace the location of any prehistoric works. Where U.S.G.S. maps are not available, country maps or land maps

[150] Major, U. S. Army, Luke Field, T. H.

may be procured. In only a few areas does the archaeologist have difficulty in getting a "base map" of the locality.

In designating a site, a good rule to follow is to accept the name given by the original investigator. In most cases this is the name of the owner of the land. Once accepted, this name should not be changed except for good reasons, and it is not a good reason simply to compliment the present owner. A site should be re-named only when it is necessary to avoid confusion with other sites or to correct an obvious error. In some cases a geographical designation, such as "Miamisburg Mound," is appropriate if a site has not been named previously.

It may be desirable to give a new number to a site as a convenience in field work or to conform to some organized system, but the original name or number should be added for reference. If the Grave Creek Mound is being discussed, this fact should be indicated instead of mentioning "a large mound in West Virginia."

Several recent publications which were otherwise excellent were so vague and ambiguous in giving locations that it was very difficult to identify the sites mentioned. For example, a list of earthworks was given with the author's numbers only, and it was necessary to check the bibliographical references to ascertain the designations employed by previous writers. The importance of precise locations seems to have escaped the attention of most archaeologists.

For several years the writer has been engaged, as opportunity offered, in taking aerial photographs of important prehistoric works, and a large amount of time has been wasted in procuring exact locations. It is necessary to plot sites on a map in order to photograph them from the air, especially as many works are so effaced that they cannot be located by simply flying over their vicinity.

It is suggested that an appropriate body such as the Committee on State Archaeological Survey appoint a sub-committee on Identification of Sites. Such a sub-committee could study and recommend standard practice in naming and numbering sites and in giving geographical locations. Also they could recommend suitable forms of maps, including standard symbols for map use. And finally, such a sub-committee might be successful in persuading the Federal Board of Surveys and Maps to adopt suitable symbols for prehistoric works, and order these places on all maps, as is being done by the British Ordnance Survey.

A SUGGESTED PROJECTILE-POINT CLASSIFICATION

J. Joe Finkelstein[151]

In the following simplified method for classifying projectile-points the use of the term *arrowhead* is purposely avoided. The term *projectile point* is used for all specimens commonly referred to as birdpoints, arrowheads, spearheads, and lance points. Relative sizes are necessarily disregarded, although unusually long or short specimens are given proper mention.

This is a taxonomic system of classes and types employing a series of letters and numbers to identify the specimen. A series of three charts has been prepared showing the most common heft, base, and notch shapes (Figures 9–12). The classification groups these characteristics in all possible combinations.

The shape of the heft is considered the primary feature of the projectile point; the six heft shapes constitute six of the eight *classes* of this classification. In these six classes the *sub-class* indicates the shape of the base; the *type* indicates the shape of the notches. The two remaining classes depend on body characteristics, one class being confined to heftless types and the other including all peculiar or specialized types.

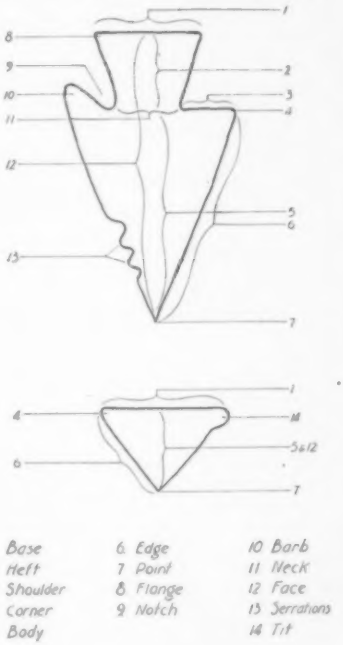


Fig. 9.—Terminology of projectile-point parts.

To classify or determine the identification of a specimen, compare its three prominent features: the heft, the base, and notches, with the

[151] University of Oklahoma, Norman, Oklahoma.

prepared charts. An *upper-case* letter, the abbreviation for the shape of the heft, indicates the class; a Roman numeral indicates the sub-class or shape of the base; and a *lower-case* letter is the type indicator, identifying the type of notch.

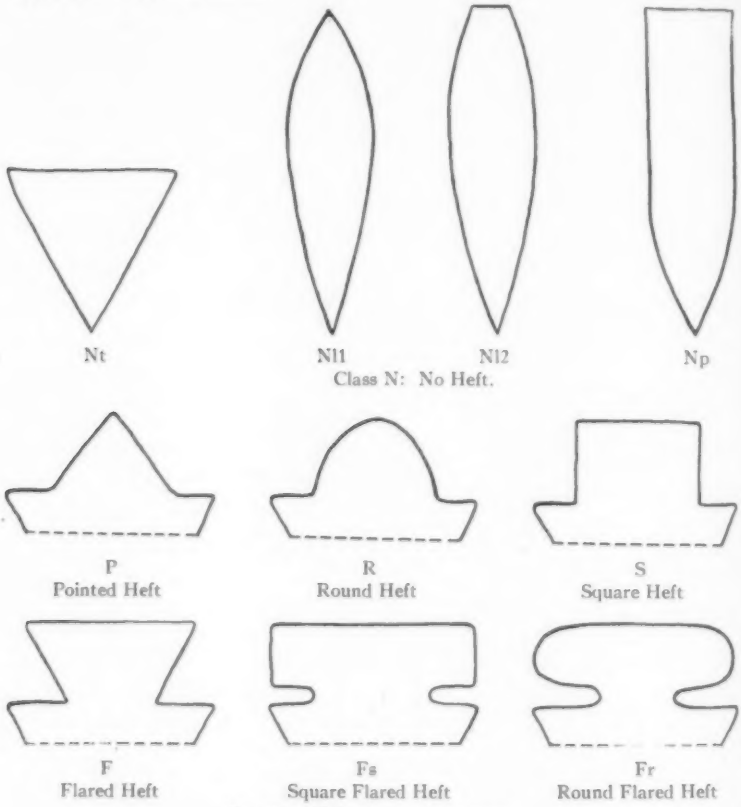


FIG. 10.—Heft shapes and classes.

The following is a complete outline of the eight classes, giving the nature of the sub-classes and types under each.

Class N: No heft. (Sub-classes indicate shape of body.)
Sub-class t: Triangular body. (Types indicate base shape; sub-types indicate curvature of edges.)

Sub-class l: Leaf- or almond-shaped body. (Types indicate form of base.)
Type 1: Pointed base.
Type 2: Broad base. (Sub-types indicate shape of base.)
Sub-class p: Parallel edges. (Types indicate shape of base.)
Class P: Pointed heft. (Types indicate form of notches.)
Class R: Round heft. (Types indicate form of notches.)
Class S: Square heft. (Sub-classes indicate type of base. Types indicate form of notches.)
Class F: Flared heft. (Sub-classes indicate type of base. Types indicate form of notches.)
Class Fs: Square flared heft. (Sub-classes indicate type of base. Types indicate form of notches.)
Class Fr: Round flared heft. (Sub-classes indicate type of base. Types indicate form of notches.)
Class X: includes all such specialized forms as do not conveniently fit into any of the other classes. The distinctive feature of these specimens is the body rather than the heft. These specimens may be subclassified by using the regular heft classification.

As a working example, the following serials are identified and explained.

FsIIIg:
Class: Square flared heft.
Sub-class: Concave base.
Type: Type g notch, deep flaking inward from the edge.

NtIIC:
Class: No heft.
Sub-class: Triangular body.
Type: Convex base.
Sub-type: Concave edges.

X3FsIIIg:
Class: Specialized form.
Type: "Thunder bird."
Sub-classification as above.

Of the three other characteristics requiring consideration here, two are common to all classes. The first is the serrated edge. It is suggested that, whenever possible, specimens having this feature be regularly identified, adding "S" to the serial following the sub-type indicator. Otherwise, such specimens naturally come under Class X. The second characteristic is the relative length of the face of a specimen. It is advisable to consider a specimen *long* if its total length is more than twice its greatest width, and to indicate this by "l"; *short*, if its total length is

less than the maximum width, indicated by "s." This letter follows the serration indicator, if serration is present. This need not apply to subclasses "l" and "p" of class N, in which most, if not all of the specimens

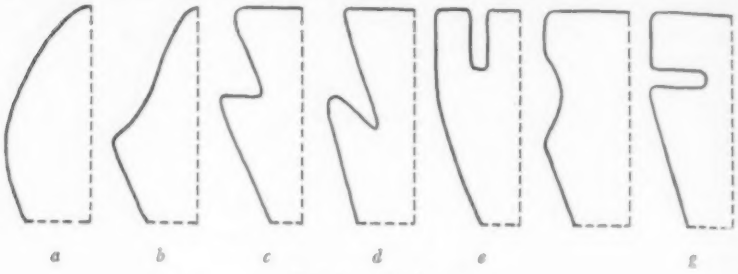


FIG. 11.—Notch types.

Description of Notch Types: a—deep flaking from corner inward angularly. No shoulder. (On Type '*a*' of Class '*S*' there is no inward chipping from the corner. The body angles away directly from the square heft.) *b*—deep flaking from side or corner inward and downward, forming definite shoulder that varies from slooped to straight. *c*—deep flaking from side or corner inward and downward, forming straight or slightly inward slanting shoulder. Distinguishable from straight shoulder of Type '*b*' by decided secondary chipping at inner corner of notch. *d*—deep flaking from corner inward angularly to form barb. *e*—deep flaking downward from base, forming arm rather than barb. *f*—slight flaking inward from edge below base, forming long, shallow notch. *g*—deep flaking inward from edge, forming arm.

are of the "long" type. The third characteristic is referred to here, for lack of a better term, as a "tit." This feature is part of the body rather than a notch type. Identify this feature with a "T" following the length character, if any. Should only one tit occur, or serrations appear on

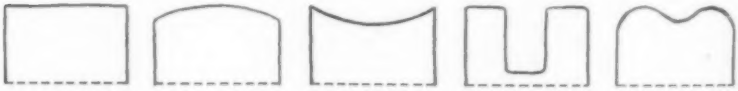


FIG. 12.—Base shapes.

only one edge, indicate this with the Arabic numeral "1," following the letter "T," or "S," as the case may be.

Because of specimens utilized in preparing this classification were from a limited area, the types of Class X presented at this time are also

limited. New types appearing in this or any other class or division of a Class does not necessitate revision of the classification. Each new specimen will naturally fall into a sub-class or type in its proper relation to other specimens in the Class to which it belongs.

The classification is here presented in outline form.

PROJECTILE-POINT CLASSIFICATION

Class N: No heft.
- Sub-class t: Triangular body.
  - Type I: Straight base.
    - Sub-type A: Straight edges. Sub-type B: Convex edges. Sub-type C: Concave edges.
  - Type II: Convex base.
    - Sub-types same as Type I.
  - Type III: Concave base.
    - Sub-types same as Type I.
  - Type V: Lobed base
    - Sub-types same as Type I.
- Sub-class l: Leaf- or almond-shaped body.
  - Type 1: Pointed base.
  - Type 2: Broad base.
    - Sub-type I: Straight base. Sub-type II: Convex base. Sub-type III: concave base. Sub-type V: Lobed base.
- Sub-class p: Parallel edges.
  - Type I: Straight base.
  - Type II: Convex base.
  - Type III: Concave base.
    - Sub-type a: Usual secondary chipping at base. Sub-type b: Longitudinal secondary chipping in broad, long flakes at base. (Folsom type.)
  - Type V: Lobed base.

Class P: Pointed heft.[152]
- Type a: Notch type a. Type b: Notch type b. Type c: Notch type c. Type d: Notch type d. Type e: Notch type e.

Class R: Round heft.[152]
- Type a: Notch type a. Type b: Notch type b. Type c: Notch type c. Type d: Notch type d. Type e: Notch type e.

[152] No sub-class figure need be inserted if the heft is of regular shape. For unusually long or short hefts, use the following sub-class characters and place them after class letter.

Sub-class 2: Unusually short heft.
Sub-class 3: Unusually long heft.

Determine the length of the heft as follows: *Short* if the length of the heft is less than its maximum width; *long* if longer than its maximum width.

Class S: Square heft.[152]
Sub-class I: Straight base.
Type a: Notch type a. Type b: Notch type b. Type c: Notch type c. Type d: Notch type d. Type e: Notch type e.
Sub-class II: Convex base.
Types same as Sub-class I.
Sub-class III: Concave base.
Types same as Sub-class I.
Sub-class IV: Forked base.
Types same as Sub-class I.
Sub-class V: Lobed base
Types same as Sub-class I.
Class F: Flared heft.
Sub-class I: Straight base.
Type b: Notch type b. Type c: Notch type c. Type d: Notch type d. Type e: Notch type e. Type f: Notch type f.
Sub-class II: Convex base.
Types same as Sub-class I.
Sub-class III: Concave base.
Types same as Sub-class I.
Sub-class V: Lobed base.
Types same as Sub-type I.
Class Fs: Square flared heft.
Sub-class I: Straight base.
Type c: Notch type c. Type d: Notch type d. Type e: Notch type e. Type f: Notch type f. Type g: Notch type g.
Sub-class II: Convex base.
Types same as Sub-class I.
Sub-class III: Concave base.
Types same as Sub-class I.
Sub-class V: Lobed base.
Types same as Sub-class I.
Class Fr: Round flared heft.
Sub-class I: Straight base.
Type c: Notch type c. Type d: Notch type d. Type e: Notch type e. Type f: Notch type f. Type g: Notch type g.
Sub-class II: Convex base.
Types same as Sub-class I.
Sub-class III: Concave base.
Types same as Sub-class I.
Sub-class V: Lobed base.
Types same as Sub-class I.

Class X: Specialized and peculiar forms.

Type 1: Long, slender drill-point types.

Sub-type a: Flat or thin body, too fragile to have actually been used as a drill point. Sub-type b: Spindle-shaped, almost round in cross-section.

Type 2: Short body; point is round or slightly pointed and bevelled. Probably broken and reshaped projectile-point.

Type 3: "Thunder-bird" point. Hefted, with wing-like, down-curved, pointed shoulders. Usually has a point that may or may not extend below the points of the wings.

Type 4: Triangular in cross-section. Usually leaf-shaped.

Type 5: Quadrangular in cross-section. Bevelled on one side of each face along opposite edges.

CORRESPONDENCE

A Porcelain Baton

Three years ago I published an account of two objects of porcelain acquired by the Ohio State Museum, in a periodical of that institution known as Museum Echoes (for June and October, 1933). Inasmuch as their origin has not yet been cleared up, I should like to see them again put on display in American Antiquity. One is illustrated in Figure 13. It is eleven and three-quarters inches long; the cross section is oval, with diameters of one and one-quarter and one and one-half inches. It is hollow, the hole being also oval in cross section with diameters of about three-eights and five-eights inches. Professor Watts, of the Department of Ceramics of Ohio State University, describes this specimen as follows:

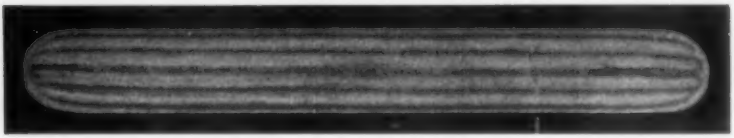


Fig. 13

"It is a nearly vitreous earthenware body covered with a light blue cobalt glaze, probably matured with the body at about 1300 degrees centigrade. Made in two parts and pressed together with a clay slip joint."

The surface of the specimen is ridged, or fluted, in relief of about three-sixteenths of an inch. The other specimen is similar in all respects to this one.

Both pieces were found near the village of Garrettsville, Portage County, in northern Ohio. The one illustrated was first described by M. C. Read in *Archaeology of Ohio* (Western Reserve Historical Society, Tracts 73–84, Vol. III. p. 118). According to Read, it was plowed up in a field " . . . at a place where several 'Indian relics' had previously been found."

In certain early French records concerning the region of the Great Lakes, there are references to the use of objects apparently similar to these, by the whites and the Indians, in the seventeenth and eighteenth centuries. These objects were called "porcelain sticks," and were used as presents, or as credentials of speakers at important councils.

In two volumes of the *Jesuit Relations* (Vol. 11, p. 257; and Vol. 40, p. 205), the French word which has been translated into English as "stick," is *baston*, or the modern *baton*. But both of these references indicate that the objects described were small enough to be enclosed in the hand or worn in the ear.

The following appears in the record of a council of Cadillac with the Ottawa

Indians at Detroit in 1707 (See Michigan Pioneer and Historical Collections, Vol. 33, p. 349): "Monsieur de la Mothe, with three sticks of porcelain, speaks to the Outtavois; this porcelain represents the black robe (a Jesuit), as if it were present at the council. . . . " That the term "porcelain" did not necessarily refer to "shell" in the French of New France is indicated by the use of both terms in an inventory of Cadillac's property at Detroit in 1711, in which there is an item of "1 white shell with two divisions of blue porcelain" (Michigan Pioneer and Historical Collections, Vol. 33, p. 524. The original is not given). Note here that the porcelain is described as blue, which is the color of the two specimens under discussion.

All efforts to find some explanation for these two objects other than that suggested in the above quotations has failed. Two visits to the village of Garretsville failed to discover anyone who knew exactly where they were found, and there is no record of any local pioneer pottery manufacturies where such things might have been made. The writer saw a fragment of another specimen in the Paine collection at Springfield, Illinois, a couple of years ago. It was identical with those herein described except for the short diameter of the cross section: about one-quarter of an inch less. It was marked "Ohio," and there is no mention of it in the Paine catalogue. C. B. Moore (*Certain Aboriginal Remains of the Northwest Florida Coast*, p. 241) describes an object somewhat similar to these from Ohio, taken from a mound in Florida. It was eleven inches long and two and one-half inches in diameter, with a rounded enlargement at both ends. The material was impure kaolin. It was not fluted or grooved, but showed " . . . traces of decoration in low relief."

The following authorities have been notified of the details concerning these porcelain objects from Ohio: M. Georges Haumont, Manufacture National de Sevres, France; Dr. Georges Henri Ridiere, Museum National D'Histoire Naturelle, Musee D'Ethnographie, Palais du Trocadero, Paris, France; M. Andre Joubin, Rue Berryer 11, Paris (VIII^{e}), France; Mr. R. W. Hemphill, Colonial Sign and Insulator Co., Akron, Ohio; and Mr. F. W. Butler, Akron Porcelain Co., Akron, Ohio. The Manufacture National de Sevres was founded in 1738, but M. Haumont knows of no records of the manufacture of porcelain objects for use in New France. Archaeologists in the northeastern part of the United States, and other students who might have information on the subject, have also been notified.

E. F. Greenman
Museum of Anthropology
University of Michigan

Unanswered Questions on Ludlow Cave

Ludlow Cave is in the extreme northwestern corner of South Dakota, far outside the hitherto recorded range of northern Plains ceramic horizons. In 1931, through the courtesy of the excavator, Mr. W. H. Over, I had the oppor-

tunity of examining materials from two superimposed cultural levels at this site. I was particularly impressed by the fact that, below the upper level marked by protohistoric artifacts, there occurred a definite horizon containing potsherds, basketry, shell gorgets, shell and bone beads, and small distinctively notched arrow points. All these artifact types, save the basketry which has not been recovered from similar sites, seemed closely comparable to those from the Upper Republican aspect in Nebraska. The resemblance between the lower level in the Ludlow Cave and the top (ceramic) horizon at Signal Butte (Signal Butte III) was particularly close. It was agreed that the publication of the Ludlow Cave findings would be highly desirable.

In a recent number of this journal (Vol. 2, No. 2, pp. 126–129) Mr. Over has discussed and illustrated certain aspects of his important excavation. Unfortunately, none of the artifacts from the protohistoric horizon are illustrated or discussed in detail. Regarding the lower horizon, such important artifact types as pipes and potsherds are merely mentioned. Potsherds are at present the most valuable single aid to cultural classification. The statement that, "Several potsherds, tempered with burned crushed granite, were not comparable with either Arikara or Mandan pottery," is tantalizing. It was my impression that these sherds were definitely significant in relating the lower Ludlow Cave horizons with the prehistoric ceramic horizons of Nebraska. Perhaps I was wrong, but until these important sherds are fully illustrated and described there is no way of settling this question.

Concerning the significance of the two superimposed layers of Ludlow Cave, Mr. Over lays great emphasis on the small arrowpoints from the lower level. According to him they agree in type with certain points from Montana which Mr. Barnum Brown believes may have been made by the Shoshoni Indians. Mr. Over, therefore, concludes that the lower level points at Ludlow Cave were also made by these Indians or by a closely related tribe. Whether the same people made the associated pottery, shell and bone work, basketry, and the like is not discussed. The small, delicately notched arrowpoint is characteristic of the late prehistoric horizons in the central Plains; the type is equally characteristic of the later Pueblo periods, and is widespread in the High Plains, the Great Basin and the Pacific Coast. It is undoubtedly a relatively late prehistoric diagnostic but seems too widespread to have specific tribal significance. On the other hand, the definite association of this type of point with ceramic remains, shell beads, pendants, and bone and stone artifacts, all strongly suggestive of the late prehistoric ceramic cultures in Nebraska, cannot be ignored.

It was my own opinion that the artifact complex from the lower level at the Ludlow Cave represented an earlier, more widespread occupation of this western region by semi-sedentary peoples, ancestral to the Arikara, and contemporaneous with the Upper Republican and Nebraska aspects in Nebraska. The material illustrated by Mr. Over confirms my earlier impression (compare Over, 1936, pls. 10, 11, with Strong, An Introduction to Nebraska Archeology, Smithsonian Misc. Collecs., Vol. 93, No. 10, pls. 7, 9, 11, 24, and pp. 291, 297).

However, until the lower level sherds, pipes, and other materials are adequately described, the full significance of this important excavation must still remain in doubt.

WILLIAM DUNCAN STRONG
Bureau of American Ethnology

STOPPERS OR MODELING TOOLS

In AMERICAN ANTIQUITY, Vol. 2, p. 137, Mr. T. J. Dillingham asks for opinions as to use of the toadstool-shaped pottery implements described and pictured by W. H. Holmes in his work on *Aboriginal Pottery of Eastern United States*.[153]

Identical toadstool-shaped objects of pottery are used by the Cocopa, Diegueño, and Kiliwa Indians of Lower California as "anvils" when "paddling" the plastic walls of pottery vessels in the course of manufacture. Potters of Oudh and the Northwest Provinces of India use similarly shaped pottery anvils,[154] as do also the Ao Naga of Assam.[155]

In view of these modern examples of the use of toadstool-shaped pottery objects, it seems likely that those from Mississippi Valley sites were similarly used, as Dr. Holmes suggested.

E. W. GIFFORD
Department of Anthropology
University of California

ORGANIZED AMATEUR STUDENTS

In an article published a few months ago in AMERICAN ANTIQUITY, attention was called to the large numbers of amateur archaeologists who, because of a lack of organization or knowledge, were engaged in a wholesale destruction of archaeological material in the New England area. The article also suggested a plan for standardizing the mapping of sites and numbering the implements recovered from them. Since that time great progress has been made toward organizing these collectors and in standardizing field methods and cataloging in this area. Apparently the purpose of my contentions is about to be justified by definite action in the right direction.

The amateur archaeologists at Attleboro and vicinity have formed an association which they have called "The Wampanoag Archaeological Society." The objects of this society are best stated by quoting from their By-Laws: "to foster and promote the study of archaeology in this area and the collection and preservation of Indian artifacts for historical and archaeological purposes."

[153] B A E-R 20: 35–36, 1903.

[154] H. R. C. Dobbs, The Pottery and Glass Industries of the North-West Provinces and Oudh, Jour. Indian Art, 7: 4, pl. 58, 1897.

[155] J. P. Mills, The Ao Nagas (London, Macmillan and Co., Ltd.), 93, 1926.

There are at present thirty members in this society, and we hope that this number will eventually be doubled. I anticipate the enrollment of all of these men in the near future as affiliates in the Society for American Archaeology.

To digress for a moment from the subject, let me offer the suggestion that the Society for American Archaeology provide for the organization of local chapters. We have here the nucleus of such a chapter, meeting monthly, organized and ready for absorption by a national group.

Dr. Byers' system of standardized mapping has been adopted with enthusiasm by the Wampanoag Society, over two hundred sites having been already located and assigned designations under that system. As there is estimated to be over 50,000 Indian implements in the collections of this group, the task of reclassifying and redesignating under this system is a tedious one, and will not be completed for some time. When it is available, however, we hope that it will be of value to archaeologists operating in the New England area.

As a further illustration of the value of such an organized group to the profession of archaeology, I should like to offer the following illustration. A few days ago a letter from Dr. Byers requested information on a type of implement called a "chopper." I sent immediately what little data I had, based on sixteen implements in my own collection. Not contented with this, we determined to test the worth of our organization. A description of the particular implement in question was drawn up and mimeographed. Copies were sent to each member of the group with a request for data from their individual collections. Ten days have passed since these requests were mailed; I have received to date data on 1,614 specimens, about eighty per cent of which can be definitely located on sites shown in our map system and thus tied in with associated material. 1,110 specimens have been assembled for study and photographing, which will be done within the next few weeks. The results will be sent to Dr. Byers for his information and the material will be available for his study should be desire it.

We do not believe that the Attleboro group is any exception, but that what has been done here can be duplicated in all areas. Cöoperation between amateurs and professionals will produce results.

MAURICE ROBBINS
Attleboro, Massachusetts

THE USE OF THE THUMB-SCRAPER

The article, *The Indian Spoon*, by Mr. Irwin W. Cox, in the April issue of this journal is timely since it brings the subject to attention. Mr. Cox offers his reasons for limiting the use of the so-called thumb-scrapers to extracting marrow from bones. As long as primitive man left no written records of the use of tools and implements, it does require much reasoning and logic in trying to solve some of the problems confronting the students of archaeology.

I think Mr. Cox omitted entirely the main and very practical use of the thumb-scrapers, that of abrading the innumerable wooden articles that primi-

tive man made and used, and which have long since disappeared through decay. The great number of bows, arrow shafts, spear shafts, handles for war and ceremonial clubs and all grooved stone implements, plates, bowls, even wooden blades or spoons for extracting marrow, and the many small bone tools such as awls, needles, and fishhooks, could be smoothed with a flint scraper. It is obvious that primitive man used wood for more purposes than any other material, yet we overlook the importance of this because his wooden articles have disappeared, and we emphasize only the preserved material that we find at village sites today. Dr. Strong, in the same issue of AMERICAN ANTIQUITY, page 302, mentions the perishable qualities of wood.

All these numberless tools and implements of wood must have been smoothed by primitive man without the use of steel blades, and he soon learned that a flint scraper was a practical tool for the purpose, as the writer and many other students have found by experimenting. The flint scraper was used for smoothing purposes in the same way that our earlier pioneers used a piece of glass. We well remember watching an uncle, more than sixty years ago, smoothing his *homemade* ax handles with glass.

The writer has access to hundreds of these thumb-scrapers for examination and finds that a large percent are worn smooth by much use on the cutting or sharp edge. Many exhibit a resharpened condition.

We agree with Mr. Cox that the flint scraper is the most common tool found on old village sites of the northwest, but this does not take into consideration the tools made of perishable material. Then too, we must realize that the making of flint scrapers was a quick, simple task, which would suggest a very good reason for their abundance, for if one became dulled it was almost as easy to make a new one as to resharpen the old one.

We are willing to admit that the larger flint scrapers may have been used for fleshing hides, as that process was necessary in preparing skins for tanning. We know that bone tools were made and used for this purpose, and it is evident that blades of hardwood must have been used even more commonly.

We cannot see any good reason why primitive man would use a flint scraper as a "spoon" for extracting marrow. We think that the white man today would use a table knife blade rather than a spoon, and a similar blade made of hardwood would have been a more practical tool for the purpose for prehistoric man.

W. H. OVER
University of South Dakota Museum
Vermillion, South Dakota

BURIAL METHODS IN MARYLAND AND ADJACENT STATES

In a previous article (this journal, Vol. 2, No. 1), I attempted to find support in local place-names for the statement, made by Dr. William Vans Murray, that the Nanticoke Indians kept the body of a dead king for many years

in a building styled a "Quacasun" house. The use of this word, in the various forms in which it occurs, to describe a sort of temple in which mummies of the more illustrious departed ones were kept, extended as far south as the Carolinas. Dr. John L. Swanton of the Bureau of American Ethnology has called my attention to the very interesting description of the "Quiogozon" of the Carolina Indians in Lawson's History of North Carolina (Lawson, John, *History of North Carolina*, 1714., Reprint, pp. 108, 124, Charlotte, N. C., 1903).

The Nottoway Indians, who, by the way, were an Iroquoian people, had a "Quiocosine house," or "Quiocasin house," on Raccoon Island, within the lower reaches of Nottoway River in southeastern Virginia, in what was then Isle of Wight County and is now the county of Southampton. In 1706 the petition of these Indians for a private "road" to this sacred building, which is described as their "place of burial," was favorably acted upon by the council of the province, to which it was directed. This "Quiocosine house" was abandoned by the Nottoways some time before June 13, 1728, on which date the council granted to John Simmons the right to take up the land lying thereabouts. The Indians formally relinquished their claims to the site on August 22 of the same year.[156]

The word "Quoioccason" occurs as the name of a small stream in a deed recorded in Henrico County, Virginia, and dated July 29, 1767, whereby John Blackburn conveyed to Richard Allen a small tract of land in this county. Quoioccason Run, which perhaps today goes by some other name, appears to be situated in the western part of the county, near the borders of Goochland.[157]

Henrico County lies on the north side of James River both above and below the city of Richmond. In his *A Further Contribution to the Study of the Mortuary Customs of the North American Indians*, Dr. H. C. Yarrow reproduces a drawing, after De Bry and Lafitau, which he identifies, doubtless correctly, as that of a "Quiogozon."[158] According to Yarrow, both Captain John Smith and Beverly have left us descriptions of these "Quiogozon" houses, although not so naming them. Beverly, in his *History of Virginia*, 1722, mentions the "Quioccos, or Idol," which the Virginia Indians set up in the "apartment" dedicated to the preservation of the mummies of their kings.[159] In the *Relation of Virginia* (circa 1609), by Henry Spelman, we read: "In ye Patomecks cuntry they have an other god whom they call Quioquascacke, and unto ther Images they offer Beades and Copper if at any time they want Rayne. . . ."[160] Dr. Swanton tells me that the word "Quiogozon" and its variations is Algonkian and undoubtedly contains the root *oke*, a spirit.

Very recently there has come to my attention a place-name which, in my opinion, may have the same significance as "Quainkeson Neck." It is found

[156] Executive Journals of the Council of Colonial Virginia, Vol. 3, p. 98; Vol. 4, pp 176, 186.

[157] Edward Pleasants Valentine Papers, p. 29, 1473.

[158] Ann. Rept., Bureau of American Ethnology, opposite page 94. 1879–1880.

[159] Ibid., pp. 131–132.

[160] Printed for Jas. F. Hunnewell at the Chiswick Press, p. 26, 1872.

in the certificate of survey of a tract of land called "Boald Cyprus Venture," which was laid out for Robert Handy on October 2, 1762, and was situated in Worcester County, Maryland.[161] This certificate reads in part as follows:

"Lying and being in the County afsd (Worcester) bounded as follows Beginning at a marked Chesnutt white oak (sic) standing on the west side of Nassaongo Creek and on a point called Quaacotion House point on the south side of the afsd Point near the head of Nassaongo Creek afsd."

Nassiongo, or Nassawango Creek is a branch of the northern side of Pocomoke River. Its mouth lies a few miles below Snow Hill, the county seat of Worcester County. Its sources now lie in Wicomico County. Bald cypress swamps hem in its middle and lower reaches. The neck between this creek and Pocomoke River formerly went by the name of Askiminakonson Neck, and in it, near the site of Snow Hill, was situated the Indian town of Askiminakonson, which, in about 1670, was the largest Indian town in Maryland then known to white people. The dominant people of the place were the Pocomokes who originally had lived elsewhere.

Regarding the land called "Quiankeson Neck," I now have definite information as to its location.[162] The certificate gives us little information, besides courses and distances, that is not in the rent-rolls. The land lies "near" Nanticoke River. It adjoins "Willsons Discovery," surveyed the same day for the same James Weatherly. This last is described as situated on a gut called "Beaver Dam Creek."[163] The certificate of survey of another adjoining tract of land, "Weatherlys Conveninecy," taken up by James Weatherly, November 6, 1699, supplies information as to the character of the land adjacent to the beginning of "Quiankeson Neck," where the "Indian Quiankeson Houses" stood:

"Lying & being in the Co^{ty} afd (then Somerset County) and on the south side of Nantecoak River being for the most part a Cyprus Swamp & bounded as foll.^{o} Beginning at a marked pine being the first bound^{e} of a tract of land formerly surv^{d} for the s^{d} Weatherly called Quacankeson Neck, thence into the swamp for breadth w.th a line drawne west seventy perches. . . . " containing two hundred acres.[164]

In that part of Maryland both the white cedar and the bald cypress are called "cypress." To my knowledge the bald cypress does not grow today on that part of Nanticoke River. It is very numerous on the Pocomoke and its branches, and is found on the Wicomico, the next large tidal river to the southward of the Nanticoke.

[161] Land Office, Annapolis, Maryland, Patents, Liber B. C. & G. S. No. 21, folio 607; see also: Additional Rent Roll of the Eastern Shore, Worcester County, 1764, Maryland Historical Society.

[162] The certificate of survey and patent of this land are recorded in Patents, Liber B. No. 23, at folios 189 and 190, respectively.

[163] Ibid., folio 199.

[164] Patents, Liber D. D. No. 5, folio 14.

"Quiankeson Neck" lies in Wicomico County, probably not more than one and three-quarters miles east of the town of Vienna, which stands on the Dorchester County side of Nanticoke River, and on the road between Vienna and Riverton. This road is a branch of the road leading from Vienna to Salisbury through Mardella Springs. "Quiankeson Neck" is, in my opinion, not far north of the Vienna-Salisbury road. Extensive salt marshes of Nanticoke River lie to the westward of this tract of land. Barren Creek runs not far to the southward of it.[165]

The neck between the northern side of Barren Creek and Nanticoke River was formerly known as Puckamee and was the site of an Indian town, which is mentioned in a proclamation of Lord Baltimore, dated March 13, 1678.[166] This town was doubtless inhabited by Nanticoke Indians. The following data are from Land Records of the Province of North Carolina:

Grant to John Bush, 210 acres, March 9, 1717, lying in Chowan precinct, beginning at a cypress in the Quackason swamp, then S.40 E. 240 poles to the centre of three pines, then N.40 E. 208 poles to a cypress in the quackason swamp, then the courses of the said swamp to the first station.[167] Grant to Francis Macklendon, 300 acres, in Chowan Precinct, beginning at a maple on the N. E. side of Quackson Swamp. Mention of a boundary in Quackson Swamp. (1717?)[168] Grant to Elizabeth McClendon, 533 acres, in Bertie Precinct, August 2, 1727, beginning at a cypress in the mouth of Quiankison swamp, thence along the loosing swamp to a poplar of Wm. Bushes corner, thence S. 45 E. 250 pole to a pine, thence N. 45 E. 260 pole to a maple on Quiankison Swamp, thence down it to the first station.[169] Grant to John Early, 340 acres, August 2, 1727, lying in Bertie precinct on Quiankison Swamp.[170]

In view of the scarcity of the information which is to be found in early Maryland records as to the mortuary customs of the local Indians, the obscurity of the records in which such information does occasionally occur, and the aid which even these scanty clues may some day be to archaeologists, I want to tell what little else I know on this subject.

I beg leave to refer the reader to an article of mine which appeared in the MARYLAND HISTORICAL MAGAZINE of December, 1930, entitled *Baltimore County Place Names*; sub-title: *Broad Run and the Indian Graves*. These "Indian

[165] See Abstracts of Deeds, Wicomico County, Md., Land Office, Annapolis, Md.: Liber W. No. 3, 1874–1883, page 100: deed, Oct 8, 1875, John C. Walker and wife to Maranda A. Owens, "Queyockoson Neck," situated in Barren Creek District, Wicomico County (formerly Somerset), beginning at a post on a line of Albert M. Bounds land and on the south side of the county road leading from Riverton to Vienna. Riverton is situated on the Wicomico County side of the river, about four miles above Vienna.

[166] Maryland Archives, Vol. 15, p. 236.

[167] State Land Office, Raleigh, N. C., Land Patents, Liber 3, 1720–1738, folio 26.

[168] Ibid., folio 37.

[169] Ibid., folio 215.

[170] Ibid., same folio.

graves," all traces of which seem long since to have disappeared, were distinguished by three piles of stones standing nearly in a triangle. About the middle of the eighteenth century they were recognized as marking the beginning of several tracts of land. The site of these "graves" is in Baltimore County, between Fork and Kingsville, in hilly country, at a distance of about four miles from the "flats" at the head of Gunpowder River, which mark the beginning of the coastal plain. The fields close by this site yield many arrowheads, but certain evidence of a village site has not come to my notice.

The place is part of the region ceded by the Susquehannocks to the Province of Maryland in 1652. This part of Maryland had no settled Indian population in historical times. Susquehannocks, "Senecas," as the people of Maryland called all of the Five Nations, and Delawares doubtless visited it from time to time; and Shawnees may have been there about the close of the seventeenth century. An Indian path, which led to the Potomac, passed about a mile and a half to the eastward of the place, and was regularly used in about 1694–6 by Indians who were probably Delawares.[171] A small band of Indians settled at the place in 1712, or thereabouts, and destroyed the marks on one of the bounded trees of the lands which centered there. Who these Indians were we are not told.

Settlement of white people in the hill country west of "tidewater" began no earlier than 1699, although there had been settlements in the "necks" of the tidal estuaries west of Chesapeake Bay since 1658. For forty years after the first white settlements had been made on "tidewater," the piedmont region between the site of Baltimore and the Susquehanna River, the "forest," as it was called, remained unsettled. Consequently these Indian graves may be as late as 1700, or even a decade or two later.

According to Yarrow, stone piles marking Indian graves are found in Ohio and Kentucky.[172] Lawson tells us of a custom of the Santee Indians of South Carolina, who marked with piles of stones places where members of their tribe had been slain in battle.[173] In one place he came upon seven of these monuments, to each of which his Indian guide added a stone.[174] Perhaps this may explain the three supposed Indian graves in Baltimore County.

Another and quite different burial custom of Maryland Indians is indicated in one of a number of depositions which were taken in the year 1740 on behalf of the Penns, in connection with their controversy with the Calverts over the Pennsylvania-Maryland boundary line. This line was supposed to pass through the site of the historical Susquehannock fort on Susquehanna River. This fort was located on the west side of the river about forty miles from its mouth.

Several of the deponents testified about its site, but others told of two Indian

[171] Md. Historical Magazine, Vol. 15, p. 115 et seq.

[172] Ann. Rept., Bureau of American Ethnology, p. 118, 1879–1880.

[173] Question: were the bodies of the slain warriors buried beneath these piles?

[174] History of North Carolina, by John Lawson, London, 1714. Reprint, pp. 10, 22, Charlotte, N. C., 1903.

forts which had been situated far down the river, about ten or eleven miles above its mouth, in the angle formed by the river and the mouth of Octoraro Creek, on the eastern side of the river. These deponents all refrained from expression of opinion regarding the name of the Indians who were the builders of these forts, and it is not unlikely that they were not called upon to answer this question for fear that the answer might be that these Indians were not Susquehannocks, as indeed was most likely the case.

Elizabeth Murphy, aged forty years, deposed that her father, John Erskine, who " . . . had lived at the same place many years by license of the Indians," had shown her there the ruins of an Indian fort and had informed her that " . . . there had been a great Battle fought there, and shewed her the Bones of several Persons buried in the Cliffs of the Rocks, which he said were the bones of Indians slain in that Battle." Margaret Allen, sister of Mrs. Murphy, testified to having seen great numbers of human bones at the place, " . . . which her father informed her, had been slain in many Battles fought there," and that " . . . she pickt up great numbers of stone arrow points and stone hatchetts there."

John Hans Steelman, a well known Indian trader, aged eighty-five years, deposed that forty or fifty years before Jacob Young, another and in his day quite famous trader, had showed him the ruined fort, where Young had pointed out " . . . several dead mens bones and told him a great battle had been fought there by the Indians."[175]

No doubt all of these Indians who had fallen in these battles had been buried, but whether all had been interred in the "cliffs of the rocks" does not appear. These rocky hillsides, rising from the river flats, run more or less parallel with the river at a distance of about one-eighth of a mile. There is reason to believe that these flats are rich in Indian remains, but no scientific effort to find them has ever been made. The shores of the river between the Conowingo power dam and the mouth of Octoraro Creek are the favorite resorts of local collectors. It seems strange that the Maryland Archives show no certain evidence of trouble or of diplomatic relations between the Province of Maryland and the Indians of these two forts, whoever they were.

William B. Marye
Baltimore, Maryland

The Iroquois and the Birdstone

In the last October issue of this journal appeared a letter from Mr. Ralph H. Whitehead of Boston, Pennsylvania, under the caption, *The Birdstone and Its Probable Use.*

On rather specious grounds Mr. Whitehead has attempted to substantiate the old theory which identifies the birdstone as a canoe-prow ornament. With this part of his discussion I am not concerned, having no valid notions concern-

[175] Pennsylvania Archives, Second Series, Vol. 16, pp. 523–524, 525.

ing the probable function of this artifact; but I wish to correct the statement, admittedly suppositional, " . . . that the development of the birdstone, along with certain other ceremonial forms of polished slate, is a cultural manifestation of the Iroquoian tribes, introduced by them and accepted with certain modifications by various tribes with whom they came in contact."

This is directly contrary to the known facts. Indeed, if any one point is established in northeastern archaeology, it is that the so-called "problematical" forms, chiefly of polished slate, are not of Iroquois provenience. Parker, sixteen years ago, pointed this out. Except for an occasional gorget, almost certainly intrusive, neither he, Skinner, Harrington, Wintemberg, nor any other worker, including the writer, has ever found such an object in the middens, pits, or graves of an Iroquois station.

In New York State our excavations have so far shown the birdstone to be a trait of but two horizons; namely, the Pt. Peninsula and Middlesex foci of the Vine Valley aspect, formerly called by us the Second Algonkin Period. It has been found associated, here and elsewhere in the northeast, with gorgets of several forms, the boatstone, bar amulet, two varieties of tubes, notched and triangular projectile points, marine-shell beads of several kinds, large prominently barbed harpoons, antler tool handles, a type of hafted beaver-tooth "engraver," the platform and elbow pipes, native copper articles, rude pointed-based pottery, and several other artifact types, not alone in pits but as grave goods on such sites as that at Swanton, Vermont,[176] and that on the west shore of Chaumont Bay, Jefferson County, New York.[177]

Since such sites unequivocally antedate the arrival of the Iroquois, and manifest, moreover, no trait linkage with that people, they could not have transmitted the birdstone to other Indians, particularly since there is every reason to believe that it was never used by them.

WILLIAM A. RITCHIE
Rochester Museum of Arts and Sciences
Rochester, New York

REGARDING KNOTTED LOOPING

Miss Singer's contribution to "Correspondence" in the last issue of AMERICAN ANTIQUITY asked two questions and offered a criticism. In response to the first question, concerning the appearance of knotted looping, which Miss Singer correctly figures in her sketch, her attention is called to Fig. 3, 6a, in the article cited, which shows the same knot labeled "knotted looping." As to the knot employed, my work with prehistoric fabrics of this sort and their impressions would not permit the dissection of the knots. I also would be interested to know their nature.

[176] Willoughby, C. C., Antiquities of the New England Indians, Peabody Museum at Harvard, p. 85, 1935.

[177] See an article by the writer in AMERICAN ANTIQUITY, this issue.

Miss Singer is slightly in error in her manner of describing the fisherman's knot. In making such nets, the running or free end of the cord is not slipped through the "finger" or overhand knot, but rather, the overhand knot is tied around the strand between two similar knots in the preceding row.

As to the criticism, which "hinges somewhat on the answer to the first question," I quote her own statement in answer, "If the fisherman's knot is to be placed elsewhere than under the knotted looping category, where would it fit?" The correspondent seems to feel some essential difference between her figures 6a and 6b. The published classification is not sufficiently detailed to distinguish between them, but its categories clearly show them to belong together, both as types of knotted looping. They are easily distinguishable from plain and twisted looping, in which there are no knots, and netting, which allows for no play or slipping between the knotted elements.

Mr. Webster's definition of netting, which Miss Singer quotes, obviously would include all the looping and netting techniques. The purpose of classification being to distinguish between techniques, it is necessary to use terms to designate these types. The use of existing terms is less confusing than an entirely new terminology.These general terms, therefore, must be given restricted connotations. This is the purpose of a technical classification.

HORACE MINER
Fellow of the Social Science
Research Council, 1936–37
St. Denis de Kamouraska
Quebec, Canada

NOTES AND NEWS

Pacific Coast Area

Dr. F. W. Hodge, Director of the Southwest Museum, spent the month of August on vacation in Sante Fe, New Mexico. While there he married Miss Gene Patricia Meany of Pasadena, whose book *The Kachinas are Coming*, is now in press.

Mr. Charles Amsden, Secretary and Treasurer of the Southwest Museum, spent the months of August and September in special work for the Laboratory of Anthropology in Sante Fe. Earlier in the summer, he represented the museum on the Monument Valley-Rainbow Bridge expedition, having charge of the archaeological work.

Beginning in April, the National Park Service Branch of the Federal Art Project has been working in the Southwest Museum under the direction of Curator M. R. Harrington. Among the products of this project are oil paintings and water colors illustrating the life of various Indian tribes, ancient and modern; pictorial maps; miniature figures, illustrating the costumes of various tribes; photographs and patterns of Indian and Spanish colonial costumes; miniature models of Indian canoes and other paraphernalia, also colored plates of different types of Indian pottery and baskets. Everything is made in duplicate for the use of the Museums of the National Park Service and for the Southwest Museum. (*E.W.G.*)

Southwestern Area

Never before in the history of southwestern archaeology has the field work of various institutions been spread over such a wide range of time phases as has been reported for the past year. Not only has the usual amount of work been conducted at those sites representing the better known periods between Basket Maker II and Pueblo III, but concentrated effort is being made to learn something of early man and to bridge some of the gaps between modern times and the Classic Pueblo period.

In coöperation with the Northern Arizona State Teachers College, the Museum of Northern Arizona completed the excavation of the Winona ball-court. The work was conducted under the direction of Mr. John C. McGregor. This court is the second of the Arizona courts to be completely cleared and the third on which any appreciable work has been done.

Mr. L. L. Hargrave made a detailed study of the architecture of Twin Caves Pueblo in the Tsegi Canyons and carried on further investigations in a cave at the head of Dogoszhi Biko canyon, partially excavated in 1933.

Miss Katharine Bartlett has been granted a year's leave of absence to accept a Museum Interneship at the Brooklyn Museum. (*E.W.H.*)

Dr. John H. Gillin, Assistant Professor, Department of Sociology and

Anthropology, University of Utah, reports the results of an expedition led by him to Nine Mile Canyon, Carbon County. He was accompanied by the following students: William Mulloy, Arden King, Carling Malouf, and John Stewart. Five sites were excavated, bringing to light information which had hitherto been lacking from this region. The following types of structure were excavated:

(1) Circular, semi-subterranean slab houses located on or near the valley floor. One group consisted of five houses and a tower-like structure with crude masonry. The largest of the slab houses were twenty-one feet in diameter; the tower was ten feet six inches in diameter.

(2) Houses located on the tops of ridges or pinnacles between 300 and 500 feet above the river floor. The walls of such houses were generally round. Within them were found adobe blocks and the remains of super-structures of wooden beams. Outside the low walls of the houses were storage cists and at least one burial cist.

(3) Lookouts or "forts." These structures are small round towers of masonry usually located on high ridges between tributary canyons, where a view in several directions could be obtained. Black-on-white, corrugated, incised and smooth gray pottery were found in the first two sites mentioned. However, the pottery of Type 2 sites was better developed than that of the Type 1 site. (*E.W.H.*)

The field work of Gila Pueblo for the past season was centered in the Puerco Drainage. A series of late Basket Maker III pit houses and related surface masonry structures, located near Houck, Arizona, were cleared. The particular inducement to work in this area arose from the need for more knowledge of the character and degree of contacts between the Basket Makers, on the southern margin of their known area of occupation, with the newly defined Mogollon culture. East of Gallup, at Red Mesa Camp, Mr. H. S. Gladwin continued a study of the small ruins in the Wingate Valley. The chief contribution here lay in the clearing of a pit house of Pueblo I age the context of which suggests the need for establishing a new phase for this area. It was also finally settled that kivas are associated with the later ruins of the area.

Gila Pueblo staff members will concentrate during the winter on the completion of the Snaketown (Hohokam area) report. It is anticipated that this work, in two volumes, will appear in the spring of 1937.

A second season of excavation was begun in November by Mr. and Mrs. Wetmore Hodges, on the Rillito Ruin, eight miles northwest of Tucson. This village, promising the remains of an occupation somewhat comparable in character and length to that of Snaketown, in the Gila Valley, will contribute a wealth of much needed information on the Hohokam in the southern portion of their present known range. Material from this site, because of the need of fitting it in with Snaketown finds, is being studied at Gila Pueblo. (*E.W.H.*)

During July and August, the Logan Museum of Beloit, Wisconsin, resumed excavations begun in 1935 at Starkweather Ruin near Reserve, Catron County,

New Mexico. During the season, fourteen pitrooms and eight surface or stone houses were excavated, disclosing two and possibly three periods of occupancy for the village. The first, a pitroom culture, showed ceramics and architecture comparable to those reported by Haury for the Mogollon village, to which he accords the Mogollon culture phases: Three Circle and San Francisco. The second occupancy saw the appearance of stone houses with horizontally-coursed masonry, hearths of stone and adobe, burial grounds to the east of the ruin, and ceramics of Classic Upper Gila type with a profusion of elements penetrating into the area from the north. Mimbres influence is also seen in sherds of Classic age from this area. A few wood specimens were obtained and have been examined by Haury for dates. One of the pitrooms yielded several logs dating 927 A.D., thus corresponding in time roughly with some of the pit houses in the Mogollon Village excavated by Gila Pueblo. The two sites are about 25 miles apart. (*E.W.H.*)

Work at Kinishba, near Fort Apache, Arizona, conducted by Dr. Byron Cummings for the University of Arizona during the 1936 season, brought the total number of rooms so far excavated to one hundred twenty. All of the excavated section, it was reported, was found to have been originally two stories in height. To date sixty ground floor and three second-story rooms have been restored. A primary and a secondary patio have been uncovered, and in the secondary patio there has been uncovered a sunken rectangular chamber that evidently served as a ceremonial room and may be called a kiva. The remaining third of this Group I of the pueblo has yet to be excavated. The plan is to uncover the remaining portion, restore about two-thirds of it, and leave the balance uncovered and protected as far as possible. The other seven groups will be left untouched and will provide possible opportunity for study by future generations.

Mr. Norman Gable has been added to the teaching staff at Tucson, and the work of Harry T. Getty and Gordon C. Baldwin has been adjusted so that they are taking certain classes in order to free Dr. Cummings for more intense work with advanced seminar classes in Southwestern, Mexican and Central American Archaeology. (*E.W.H.*)

Excavation of Pueblo Grande, the great Hohokam ruin of the Classic period, owned and being developed by the City of Phoenix under the direction of Odd S. Halseth, City Archaeologist, has been progressing steadily for the past six months. Excavation of a great room in the southwest corner bears out evidence furnished by test work that Pueblo Grande was first a single-storied building with masonry walls, that this first story was deliberately filled with trash and earth, and that rooms and houses of both masonry and jacal type construction were built upon this artificial mound. It was evident throughout that the loads of trash and earth composing the fill had been gathered indiscriminately from contemporary trash heaps and from trash concentrations of earlier periods. (*E.W.H.*)

Between August and late November, the Peabody Museum of Harvard University continued its excavations at Awatovi, begun last year. This project is under the direction of Mr. J. O. Brew and will be carried on for several years. Awatovi, a Hopi town inhabited until 1700 and abandoned because of hostilities with neighboring Hopi people, presents the remains of an occupation probably in excess of 500 years. The current season was devoted mainly to the investigation of one of the older sections of the village, including houses and kivas. Some of the latter possessed wall paintings of great variety and interest. Renovation of the plaster in kivas was probably of frequent occurrence then, as now, since in some of these rooms the murals occurred layer on layer. It is expected that future years will be devoted to later sections of Awatovi, to carry the sequence successively from late prehistoric into historic times.

In September Mr. Volney H. Jones, Assistant in the Laboratory of Ethnobotany, Museum of Anthropology, University of Michigan, joined the party at Awatovi. He was engaged in removing adobe bricks and mortar from the walls of the mission structure for the purpose of analyzing the plant content. The bricks and mortar were highly tempered with straw and refuse, promising to offer much identifiable material demonstrating the early introduction of European crop plants and weeds into the Hopi area. The mission, of sun-dried adobe bricks rather than stone masonry, was built under Spanish direction during or shortly after 1629.

The material will be studied at the University of Michigan in connection with collections of Hopi crop plants obtained from a crop survey made in 1935 by Mr. Jones and Mr. Alfred F. Whiting, the latter from the Museum of Northern Arizona. This survey revealed that while traditions concerning the receipt of crop plants from the Spanish are absent, yet it is highly suggestive that almost all of the Hopi names for introduced crop plants are of Spanish derivation. The adobe brick analysis has been used with great success by the University of California with bricks from missions in southern Arizona and California, but has not been previously attempted in the Pueblo area. (*E.W.H.*)

The Laboratory of Anthropology, Sante Fe, New Mexico, reports that Anna O. Shepard's studies in ceramic technology have been directed mainly toward the pottery of the La Plata district of southwestern Colorado, and of the Red Rock region of northeastern Arizona.

The work of several seasons past, in excavations at Pueblo Pindi by W. S. Stallings, Jr., and S. A. Stubbs, and in the Gallina region by H. P. Mera, have been or are being written up. In addition, a study in pueblo pottery design, under the title *Rain Bird*, by H. P. Mera, is complete and in the hands of the printer. Illustrations are being prepared by him for a paper on *Style Trends in Pueblo Indian Pottery of the Seventeenth to the Nineteenth Centuries*. This will require about sixty plates, of which over half are now complete.

Field work for the summer of 1937 is being planned to provide further data for a paper on the Glaze pottery of the Rio Grande area. (*E.W.H.*)

During an expedition to White Pine County, Nevada, conducted for the Southwest Museum of Los Angeles by Lieutenant S. M. Wheeler and Mr. Johns H. Harrington (see item under *Early Man*), a new late Pueblo II site was discovered near Baker, covering about forty acres, which seems to be the largest on record situated so far north and west.

Mr. M. R. Harrington made a trip in September and October, as consultant to the National Park Service, to inspect some newly discovered caves near the mouth of the Grand Canyon. One of them contains abundant dung and remains of the extinct ground sloth *Nothrotherium Shastense* Sinclair, the others have layers of ground sloth dung underlying deposits containing early Pueblo pottery and other artifacts. So far no trace of man contemporary with the sloths has been found.

Mr. Edwin F. Walker, with volunteer assistance, excavated a site at San Fernando, California, which appeared to be a ceremonial area of remote prehistoric time. Quantities of metates were unearthed, but only one mortar, the characteristic grinding stone of late times. Circular and cylindrical stones of no apparent utilitarian value led to the characterization of the site as probably ceremonial. No camp refuse occurred, for further confirmation of this conclusion. The projectile points recovered seemed to be of atlatl rather than arrow size. Occurrence of striking similar material has just been reported from New South Wales. (See The Masterkey for May, and November, 1936). Mr. Walker has undertaken an archaeological survey of southern California, to be a compilation of existing data as well as new discoveries.

Mr. and Mrs. William H. Campbell of the Desert Branch, now called the Twenty Nine Palms Laboratory of Southwest Museum, necessarily suspended their work in the desert during the hot months, but devoted themselves to a report on Pleistocene Lake Mohave and its human occupation, to be published in the Southwest Museum Papers series. Field work will be resumed during the winter.

Miss Frances E. Watkins has under way a study of the rôle of women in the Indian economic and social scheme. (*E.W.H.*)

A very valuable collection of pottery from the Southwest has been presented to the Peabody Museum, Cambridge, Massachusetts, by Dr. and Mrs. A. V. Kidder in memory of the late Samuel J. Guernsey. This collection was made between the years 1907 and 1925, and represents excellent specimens of the "Old Modern" types now so difficult to obtain. (*A. M. Tozzer.*)

Great Plains Area

The Third Plains Archaeological Conference met at Mt. Vernon, Iowa, November 6 and 7. Dr. Charles R. Keyes, Iowa State Archaeologist, and Cornell College were the hosts. Archaeologists from Michigan, Wisconsin, Iowa, Illinois, Missouri, South Dakota, Nebraska, and the Smithsonian Institution were present. Welcomed newcomers were the Missouri delegation who contrib-

uted information resulting from the pioneer archaeological efforts of the University of Missouri.

Specimens, especially pottery, and pictures illustrated many cultural manifestations throughout the area. The morning of the sixth was devoted to the informal study and discussion of the materials. During the following sessions Dr. Fay-Cooper Cole presided and the cultural manifestations of each state were informally described. In some cases lists of culture traits for each manifestation were passed out in mimeographed form. Various problems of classification were discussed.

In the discussion four major points were stressed.

1. The fact that, while the classificatory and historical methods are not antagonistic to each other, to avoid confusion, they must be clearly segregated in the mind of the worker. The classification of cultural manifestations is based solely on the similarity and dissimilarity of trait complexes and is entirely unrelated to generic development.

2. The developmental or generic relationship of two or more cultural manifestations do not necessarily require that they be placed in the same aspect, phase or pattern.

3. The study and classification of cultural manifestations, while initially starting with data secured at components, may proceed by two different methods, apparently with identical results: (1) by a purely objective method whereby materials from the area under consideration are compared without regard to their components, and on a basis of similarity and dissimilarity are grouped first in a large general way to identify patterns, and then into subdivisions relating to phase, aspect and focus; (2) by employing the recurring complex method to determine foci, aspects, phases and patterns, in that order.

4. Although it is highly desirable, where possible, to secure physiographic evidence relating to the age of components, such data should be reviewed in the light of archaeological data and, where there exists an unexplainable conflict between the apparent results of the two methods, be accepted only with critical caution.

Considerable progress was made toward classifying certain culture manifestations of major importance in the northern Plains and eastern marginal areas. (*Earl H. Bell.*)

The University of Nebraska Archaeological Survey devoted two and a half months to survey and excavation in northern Nebraska in the lower drainage basins of the Niobrara River and Ponca Creek, the historical home of the Ponca and Omaha tribes. Dr. William Van Royen, physiographer from the University, spent more than two weeks with the party studying the physiographic conditions near the Lynch site.

Over fifty sites were located. Four distinct pottery complexes were encountered. One group is associated with a documented Ponca site, one with house

rings, one with a buried site near Lynch, Nebraska, and one with another buried site farther west in Brown County.

The major portion of the work was carried on near Lynch, Nebraska, in a large site extending over about one and one-half sections. The site is located on a flat divide between Ponca and Whiskey Creeks, over two hundred feet above the first terraces. It was covered with from two to fifteen feet of wind-deposited sand. The habitation stratum is from four to twenty-five inches thick and is rich in stone work, bone and pottery. Physiographic evidence seems to indicate the possibility of a moderate antiquity. The high development of pottery and agriculture, on the other hand, makes it necessary to carefully weigh all available evidence before reaching the final conclusion concerning the age of the site.

This condition of one or two old soil zones is prevalent in north central Nebraska, and the presence of artifacts in the upper one is not limited to the site at Lynch. In the Sand Hills, which are mostly "fixed dunes," the old soil zone contains a thick, heavily cord-marked pottery quite reminiscent of what has been called "Woodland" in the Mississippi Valley. (*Earl H. Bell.*)

Northern Mississippi Area

In late June and early July, ten days of emergency work under Mr. Ellison Orr of Waukon, Iowa, saved the information and materials contained in the three remaining mounds of the Mud Hen Joe mound group, situated on the bank of the Mississippi River two miles above Waukon Junction. The work was done just preceding that of steam shovels engaged in grading for a new highway. Mr. Orr had induced the State Highway Commission to furnish three men, and the State Conservation Commission to care for their transportation. Three mound plans, several photographs of badly decayed secondary burials, a fine bone awl, several arrowheads and a restorable pot were the net salvage.

Regular field work in Iowa did not begin until September 1, when an archaeological project was finally set up under the joint sponsorship of WPA and the Iowa State Planning Board. With Mr. Orr as director of excavations, work has been continuous since the date mentioned, all of this confined to Allamakee County in northeastern Iowa. The expectation is to continue work in a Jones County rock shelter after digging in the open becomes impossible.

With an average force of seven men, Mr. Orr has excavated two small Oneota cemetries with fifteen primary burials, eighteen Woodland mounds with secondary burials, and has done extensive trenching in one Oneota village site. Nearly all of the mounds had been under cultivation for many years, so that the present efforts also were largely in the nature of emergency work. As in 1934, both the mounds of the Lane Farm group and the New Galena group contained a number of intrusive Oneota burials. Five mounds belonging to the Great Group that originally stood on the Harpers Ferry terrace of the Missis-

sippi River contained secondary burials only, without any trace of Oneota either in the mounds or on the terrace.

The excavations of the first two months and a half have not greatly changed the outlines of northeastern Iowa archaeology as revealed by the work of 1934, but they have greatly enriched the store of records and cultural materials from the area. All the results are being preserved by The State Historical Society of Iowa at Iowa City. (*Chas. R. Keyes.*)

From the 21st of June to the 3rd of September, a group of fourteen graduate students and hired labor, under the direction of Thorne Deuel, carried on for the University of Chicago its third season's exploration of the Kincaid and neighboring sites near Brookport, Illinois. Four projects were undertaken: (1) the exploration of another portion of the village site; (2) the trenching of the largest earthen truncated pyramid; (3) the excavation of a burial mound on the E. E. Lewis place; and (4) the exploration of the Baumer village site.

The trench into the great mound was stepped up to the central main axis. No evidence of structure other than lens-shaped loads of earth was clearly discernible during this season's work. The trench was roofed over until next season when it will be completed. It is ten feet wide, one hundred feet long, and at its maximum, thirty-three feet high. Its further excavation will be based upon the result of next season's findings.

The village site yielded nine basin-shaped clay hearths belonging to as many dwellings, with at least four dwellings superimposed one upon the other. The houses were rectangular in outline, but of poorer workmanship than those previously found. They also contained certain objects, including bell-pestles and a gorget, which may indicate they were occupied while cultures like that of the Baumer village still remained in the neighborhood.

The small section of the Lewis burial mound completed revealed fifty-four burials, including two stone-box graves with covers and floors. Burials were accompanied by grave furniture, often consisting of pottery of Middle Mississippi type. Skeletal material was so badly disintegrated that only traces of bone remained.

The Baumer village yielded artifacts and so-called basket- or mat-impressed and cord-decorated pottery resembling those figured by M. R. Harrington from the "round graves" of Kentucky. The only burials found lay in cylindrical pits. The outlines of a circular house was discovered. It may be recalled that the same culture, showing many Woodland traits, was found by an earlier University field party beneath a mound of the Kincaid component of Middle Mississippi.

There seem to be in the vicinity of Brookport three structural units, each consisting of four or five mounds and a village: the Kincaid, the Lewis, and the Fritts groups, of which the first named may be the latest in time. All appear to exhibit traits of the Upper and Lower phases, but predominantly are probably Middle phase. Next season will be devoted to the study of some unexplored

features of the Kincaid group, and of the relationships of the other unit groups and the Baumer village to Kincaid village. (*T.D.*)

Dr. P. F. Titterington of St. Louis continued work at the Jersey Bluff sites in Jersey County, Illinois, during the month of August, 1936.

Six mounds were excavated. The principal features located were burials, containing the remains of at least fifty-nine individuals in addition to a mass cremation. The flexed position prevailed, although the disposition of many of the skeletons could not be determined due to previous disturbance of the graves. Anculosa beads were by far the most commonly encountered artifacts found with the dead. Other artifacts included disc shell beads, a perforated dog or wolf tooth, two plumb bobs, a granite celt, a stone discoidal, a grit-tempered pottery pipe, and seven clusters of potsherds. The pottery is grit-tempered with cord-roughened outer surfaces, and is characteristically Woodland in type.

The data collected not only add to the complex of traits previously known for the Jersey Bluff focus, but serve to substantiate certain previously doubtful traits. (*P. F. Titterington.*)

Mr. Richard A. Morgan of Middletown, Ohio, has been appointed Acting Curator of Archaeology of the Ohio State Museum. Mr. Morgan, who is a graduate of Ohio State University, where he specialized in geology, obtained his Master's degree at that institution in 1929, after making a special study of the geological aspects of Ohio archaeology. He is now preparing a thesis in the field of archaeology in fulfillment of requirements for the Ph. D. degree, based upon studies undertaken in the Department of Anthropology, University of Chicago. Mr. Morgan has had archaeological field experience in Ohio, Illinois and Michigan.

Northeastern Area

W. J. Wintemberg, of the National Museum of Canada, resumed his work of the previous season on a prehistoric burial site near Windsor, Ontario. Additional flexed and bundle burials, two of which contained partly incinerated bones, were exhumed. One of the skulls was perforated near bregma and two others bore each a deep lenticular cut across the parietals, similar to the one found in the same site last year, and closely resembling Hinsdale's and Greenman's recently described material from eastern Michigan.

With one skeleton Wintemberg found a pressure-fractured pot of high narrow type with flaring rim, decorated in a manner similar to the early Neutral ware from the Uren site in Oxford County, Ontario (Bull. 51, National Museum of Canada). Potsherds, stone pipes, and a stone adze were also recovered near the human remains.

Harlan I. Smith and Mr. Wintemberg continued to assemble, analyze, and classify information on the sites and subjects of Canadian archaeology. They have an enormous file of data on this matter (*W.A.R.*)

In western Ontario, P. M. Pringle, of Toronto, persists in his meticulous survey of the prehistoric vestiges in the lower Grand River Valley. He is recording by means of map, notebook, and photograph not only sites and burials, but individual surface finds as well. His results emphasize the importance of the Niagara Peninsula as a main route of travel between the Upper Great Lakes country and New York. (*W.A.R.*)

The Department of Archaeology of Phillips Academy resumed work on the shellheaps of the Maine coast during the month of July, according to a report from Moorehead, Byers, and Johnson. About one half of an important midden at Bluehill Falls was excavated and tentatively identified as a workshop site where some of the larger stone tools were worked down. Among the objects taken out are plummets, pottery, fragments of ground slate tools, bone implements, hammerstones, adze or gouge blanks, celts, gouges, and adzes. One of the slate points is of the broad-bladed form distributed throughout much of the St. Lawrence region and formerly attributed to the Eskimo-like culture in New York. Two burials were found, one being liberally sprinkled with red ochre and accompanied by bone tools and a gouge.

During August a survey of Martha's Vineyard was undertaken. In addition, two "Algonkian" sites were excavated which produced large chipped-slate blades, crude pottery, a gouge, and other material. Post moulds and large pits indicated house sites.

Publication of the results of the season's work is planned for late spring or early summer. (*W.A.R.*)

Mr. George G. Heye states that Godfrey J. Olsen's investigations for the Museum of the American Indian were continued near Larrabee's Point, Vermont, but the burials uncovered failed to yield additional unbaked clay tubes. A restorable pottery vessel was secured, however.

During the summer the Museum placed on exhibition the important material from the so-called Temple Mound in Le Flore County, Oklahoma. (*W.A.R.*)

Dr. Alfred M. Tozzer, of Harvard University, spent the summer in Honolulu working on an English edition of Landa's *Relacion*, which is to appear as a Paper of the Peabody Museum, in connection with the life of Landa being prepared by France Schole of the Carnegie Institution. (*W.A.R.*)

Under the direction of Arthur C. Parker, William A. Ritchie, of the Rochester Muesum of Arts and Sciences, assisted by John H. Bailey, J. Sheldon Fisher, and Charles F. Wray, investigated pre-Iroquoian sites in the western part of the St. Lawrence valley. The results of this work provide a fairly adequate concept of the relationship of this with adjoining areas both within and without the state, and some significant progress was made with the problem of the ground slates.

In June and October two mounds were excavated in the Genesee Valley. Accompanying skeletons in centrally-placed stone cists and in the mound fill were found such Hopewellian traits as platform pipes, a sheet copper and silver-covered wooden breast ornament, and Flint Ridge chalcedony flake knives, intermingled with a wealth of artifacts typical of the Vine Valley aspect in New York. These include chiefly pointed-bottomed, straight-sided pottery vessels; steatite pots; gorgets; an obtuse-angle pipe; and scores of projectile points.

The evidence seems conclusive that people possessed of the Hopewellian culture entered the Genesee country, probably through the Allegheny valley, and fused with a widespread older group. Sites of this older Vine Valley aspect (formerly termed the Second Algonkin Period) occur in many parts of the state, both "pure" and modified by influences from several quarters. The Hopewellian intrusion is the latest to be recognized. (*W.A.R.*)

On October 16 and 17 the Eastern States Archaeological Federation convened for its annual meeting in the American Museum of Natural History. Delegates from Massachusetts, Connecticut, New York, Pennsylvania, New Jersey, Delaware, and Maryland attended and participated in the program of papers and discussions. Drs. Nelson and Wissler of the American Museum also spoke. The Federation is knitting together the efforts of professional and amateur archaeologists on the east coast in a most helpful and satisfactory way. (*W.A.R.*)

In New Jersey, a WPA project, known as the Indian Site Survey, was formed in March, 1936, under the direction of Dr. Dorothy Cross. Sponsored by the New Jersey State Museum, its activities include excavation, survey of Indian sites, inventory of collections, compilation of a bibliography, research into early historical sources, correlation of ethnological data, and locating and mapping Indian trails and historical Indian places.

Excavations have thus far been conducted on five sites in Burlington, Gloucester, Monmouth, and Mercer counties. "The most interesting results," reports Dr. Cross, "have been obtained from the Abbott farm (on the Delaware River terrace south of Trenton). They have not been correlated completely as yet, so no definite conclusion may be drawn. However, it is hoped that when the results are studied they will shed some light on the confirmation or contradiction of theories propounded by the earlier excavations of this site. Among the more important specimens excavated on the Abbott farm are several large complete pots of typical Algonkian design, semi-lunar knives, and a cache of perfect axes and celts." (*W.A.R.*)

Middle American Area

Work on the West Indian archaeological program of the Peabody Museum, Yale University, was continued by Mr. Irving Rouse. Mr. Rouse spent ten weeks in Puerto Rico this summer, initiating an archaeological survey of that

island. He located and visited sixty-nine sites on the eastern end of the island, and excavated stratigraphical cuts in twelve of these sites.

Two of these cuts, in a site near Trujillo Alto and another near Cayey, were deep enough to give a complete stratigraphical record of the known culture sequence in Puerto Rico. It now appears that the two supposed cultural stages, the "Crab Culture" and the "Shell Culture," which appeared as the result of previous Peabody Museum expeditions, were part of a single cultural development which took place in Puerto Rico. This development is illustrated in the Trujillo Alto site by a change from typically Crab culture artifacts in the lower levels to types of artifacts intermediate between Shell and Crab culture specimens in the upper levels. In the Cayey site the sequence is completed, for the intermediate types of artifacts were found in the lower levels of that site, and typical Shell culture material occurred in the upper levels.

By use of the statistical method developed by Spier in his work on Zuñi ruins, the other sites excavated can be correlated with the sequence established at Trujillo Alto and Cayey. On the basis of three of these sites, ball courts appear to have been used relatively late during the sequence. On the basis of a single site, stone collars and three-pointed stones appear to have been very late.

The pottery found near the bottom of the sequence resembles most closely the pottery from the Lesser Antilles. The pottery found at the top of the sequence resembles more closely the typical pottery of Haiti and the Dominican Republic.

Twelve of the sites visited appeared to contain no pottery. These were the first non-pottery sites investigated in Puerto Rico. Two of them were partially excavated, but they were extremely poor in artifacts. They do not appear to be correlated in culture (although perhaps they were occupied during the same period of time) with any of the non-pottery sites that have been excavated in Cuba, Haiti, the Dominican Republic, or the Virgin Islands. (*J.A.M.*)

Dr. Alfonso Caso has supplied the following detailed account of the main results of his very important and fascinating work at Monte Alban; this is the fifth season that the excavations have been continued there.

"1. We discovered a temple, Mound J, which I think is an astronomical observatory on account of its unusual orientation exactly to the northeast. This is very distinct from the orientation of the other mounds of the Great Plaza, which are orientated to some one of the cardinal points. In this temple is a room roofed by an angular vault and, a very important feature, its posterior façade is formed by great monoliths with hieroglyphic inscriptions; these are of a very ancient period which probably corresponds to the second ceramic epoch (this latter is probably related to the Q complex). This class of writing is similar to, but not the same as, that which appears in the third epoch, to which belong the major part of the stelae that I described in my book.

"2. The second important discovery is that of Tonalamatl dates, with the

symbols of points and lines (rayas), on sculptures of the type that Batres termed 'Dancers'; these correspond to the first ceramic epoch of Monte Alban, which is to say, in all probability to an epoch before the time of the Old Maya Empire. One of the glyphs found on these dancing sculptures is the same as Glyph J, according to my nomenclature, which fact demonstrates the unity of Zapotec writing throughout the three periods, although there are stylistic differences between them.

"3. The stratigraphic explorations have demonstrated the correctness of the five epochs that we established last year by the analysis of the tombs and burials. There may possibly be an epoch before the first of these, with very coarse (*burda*) pottery which we found at the base of the stratigraphic pits, but I would not care to affirm the existence of this anterior epoch until I finish my studies of all my exploratory pits.

"4. Very important jade ornaments were discovered as offerings in two of the temples. One of these shows decided Teotihuacán influences, and therefore belongs to the third ceramic epoch. Others show a decided Maya influence and may belong to the third or, more likely, the fourth epoch.

"5. A tomb of the first epoch showed the connection between this and the so-called Olmec figurines; there are two urns with figures with the mouth in the same form as those of the Olmec type.

"6. We found some vases of Teotihuacán provenience, of the type termed "flower-pots" (*floreros*), and flattened heads of Totonac style.

"7. We have to date discovered 101 tombs and have completed the exploration of various edifices and the reconstruction of the Ball-Court, of Mound B, and the Central Mounds.

"8. Next season we will finish the exploration of Mound J, in which certainly are many stones with inscriptions, and we will seek for tombs of the first and fifth epochs, which to date have been very few.

"9. I forgot to mention the discovery of a Mixtec burial with a most beautiful polychrome olla with three feet, and other vessels of black ware, also of the fifth epoch. But the most important discovery was that of the tools of a worker in bone which we found within a polychrome olla; these consist of four little copper chisels and a scraper of shell. Within the olla were found some fragments of bone worked in the same style as those which we found in Tomb 7." (*J. A. M.*)

South American Area

Activity in the South American archaeological section has been limited in the past year. The National Museum of Peru, under the direction of Dr. Luis E. Valcarcel, has terminated its extensive work in the Cuzco district. The work consisted of new excavation, cleaning up of known sites, reconstruction, and road building to make the ruins available to visitors. New archaeological discoveries in the Cuzco excavations are numerous and important. Reports of the work with excellent plans, drawings and photographs, including description of

artifacts, have been published in four issues of the Revista del Museo Nacional, Lima, covering the years 1934 and 1935. Final summary of this work and chronological implications is being prepared now by Dr. Valcarcel.

Incidental to the Cuzco work, a site called Pukara near Puno at the northern end of Lake Titicaca was visited by both Drs. Valcarcel and Julio C. Tello, although little excavating has been done. This site promises important discoveries as the numerous statues and pottery fragments, although typologically divisible into several styles, are all related to Tiahuanaco civilization. However, the pottery presents considerable variation on known Tiahuanaco styles, notably the use of incised lines to divide color areas. The shapes and some of the designs suggest a connection to the "Chiripa" type pottery from the southern end of Lake Titicaca, described by Bennett (Excavations in Bolivia, AMNH-AP, Vol. 35, Pt. 4, 1936). A brief statement with a few photographs of this material has been published by Dr. Valcarcel in the Revista del Museo Nacional, Vol. 4, No. 1, 1935. (*W. C. B.*)

Wendell C. Bennett has returned from Peru after an eight month's archaeological survey of the north coast region. Concentrated excavations were carried on in the valleys of Viru and Lambayeque, with cursory exploration in Nepeña, Chicama, Trujillo region, and Pacasmayo. The most important results of this trip have been the new chronological data for the Viru section, principally in the "Middle Periods" between the Early Chimu (or Muchic) and the Late Chimu and Inca. A type ware was isolated which is typified by "negative painting" design. This appears to represent a contact of Recuay in the highlands with the last phase of Early Chimu on the coast, which later, augmented with Epigonal influence from the south, gave rise to the Chanchan and other Middle Period styles. In the Lambayeque section nothing older than Late Chimu was found, and nothing which did not suggest a southern origin. While exploration in the extensive Lambayeque region is far from complete, previous exploration by archaeologists, such as Kroeber, Olson, and Means, has likewise failed to produce any ceramic group demonstrably contemporaneous with the Early Chimu farther south. Perhaps the far north of Peru was never inhabited by peoples of higher civilization until Late Chimu times. (*W. C. B.*)

Junius Bird plans to continue his archaeological survey in the southern Chilean archipelago by excavating more shell heaps in the section about the Straits of Magellan. This represents Bird's second continuous year in an inhospitable and little known archaeological section. (*W. C. B.*)

With the reopening of San Marcos University in Lima, the Boletín Bibliográfico has reappeared, numbers 1 and 2 of volume 9 being published in 1936. The first issue contains a bibliography of Peruvian ethnology, and the second, Peruvian archaeology. These bibliographies cover roughly the period between 1920 and 1933, and include items of interest in little known publications. (*W. C. B.*)

Early Man in America

The Morrill and Frick Paleontological Expedition of the Nebraska State Museum, University of Nebraska, has just completed a most successful field season. Dr. E. H. Barbour, Director of the Museum, sent a party of twelve into the field during the summer of 1936. A large collection of vertebrate fossils was made from a lower Pleistocene terrace of Nebraskan or early Aftonian age in Morrill County, Nebraska. The remains of about forty different species of animals were found. This new fauna will aid considerably in giving us a better understanding of Pleistocene animal life, especially with regard to migrations and their first appearance in this section of America.

In northwestern Nebraska, near Crawford, the field party continued its investigation of the problem of the antiquity of man. Much work was done concerning the relationship of the various artifact levels to each other, and to the terraces of the region. At least five buried zones showing human occupation were found, some of them buried as much as thirty feet. The problem of the succession of artifact horizons here is primarily of a geological and paleontological nature, with levels dating from Yuma-Folsom to historic times. This latter investigation was carried on in other related areas, and a portion of this work was done in coöperation with the Carnegie Institution of Washington, D. C. (*C. Bertrand Schultz.*)

Dr. Ernst Antevs, who has been working the past few years on various phases of climatic changes in the west as they bear on the problem of early man, spent the greater part of the year in field work in Arizona and has again returned to Gila Pueblo at Globe for the winter. The profusion of artifacts, as well as the wide-spread character of sites that can be studied with the aid of geology, has led him to feel that his work here will be highly significant. (*E. W. H.*)

The San Diego Museum, which has been conducting an intermittent survey of the Mohave Desert during the past nine years, completed its project this year. It is now proposed to issue a series of publications covering this and previous work in the Colorado Desert.

During October a field party in charge of Malcolm J. Rogers, while studying the geology of the fossil lakes of the Mohave Desert, made a most arresting find: a Folsomoid point, the first known find of this nature in the far west. Although two others with certain Folsom-like characteristics had previously been found, the present point, with one exception, has all the necessary attributes. It has the proper profile and the bifacial grooving, but does not exhibit the skillfully controlled flaking of the true Folsom point. The point was a surface find from an archaeological site located on the thirty-four foot terrace of the extinct Lake Mohave. Strangely enough, it was associated with a cultural industry which is not considered to represent the oldest horizon in the local archaeology, but the second in a series of four pre-pottery horizons. The dart-

point-producing horizon of the California deserts and Nevada is further complicated by the widespread occurrence of Yuma points in small numbers. As they are often found in work-shop floors, it is obvious that they are of local manufacture and not importations. (*E. W. H.*)

Thanks to a small grant from the Carnegie Institution of Washington, the Southwest Museum was able to continue the exploration of Smith Creek Cave in White Pine County, Nevada, the work being in charge of Lieutenant S. M. Wheeler and Mr. Johns H. Harrington. While no additional traces of man were discovered outside of animal bones apparently split by human hands, the expedition was successful in obtaining the bones of a number of species of animals characteristic of the late Pleistocene, or early Recent periods, including an undescribed species of mountain goat. In connection with this work, the museum enjoyed the coöperation of Dr. Chester Stock of the California Institute of Technology. (*E. W. G.*)

Obituary

I desire to report the death of Cornelius B. Cosgrove, Research Associate of the Peabody Museum, which took place on October 25 at Keams Canyon, Arizona. He and Mrs. Cosgrove were on a Peabody Museum expedition which is being conducted by Mr. J. O. Brew.

Mr. Cosgrove has been intimately connected with the Southwestern work of the Museum since 1924. His faithfulness and painstaking investigations, done in collaboration with Mrs. Cosgrove, are represented by Volume 15, Number 1 of the Papers of the Peabody Museum. At the time of his death he had practically completed a report on a Basket Maker site in Greenwood Canyon, New Mexico, which is to appear as another Paper of the Museum. (*Alfred M. Tozzer.*)

BOOK REVIEWS

The Mogollon Culture of Southwestern New Mexico. EMIL W. HAURY. (Medallion Papers, No. 20: 1–146, 34 plates, 32 text figs., privately printed for Gila Pueblo, Globe, Arizona, 1936.)

The Mimbres culture usually has been classified as a southern extension or offshoot of the San Juan Pueblo area. Most archaeologists have accepted this hypothesis as proven. Not so, Dr. Haury. In 1931, while conducting an archaeological survey in the Mimbres country, he came upon certain clues that did not fit in with the orthodox view of the manner of growth of Southwestern culture. As soon as possible, he returned to this region (as leader of the Gila Pueblo Expeditions) and dug for two seasons. During the first summer he was assisted by several Fellows from the Labratory of Anthropology.

This report, based on the work of two seasons, presents the latest information bearing on the origin and early history of the Mimbres culture, together with Haury's conclusions. The results of his work are so astonishing, so far-reaching, and so unorthodox that the worth of this report and of the new data contained therein probably will not be understood or esteemed for some years.

Dr. Haury describes the architecture and material remains of two sites, and ends with a convincing and logical hypothesis concerning Mimbres prehistory, and a revised system of pottery phases. The latter is sound because it is based on stratigraphy (and Haury knows how easily stratigraphy can mislead the unwary), on many sherds, and on statistical averages, of the weaknesses of which the author is also cognizant.

Haury is of the opinion that the early Mimbres culture, i.e. the Mogollon, is not a peripheral variation of the Basket Maker-Pueblo complex of the north, nor of the Hohokam of the west, but is rather the product of a third and heretofore unrecognized basic group. Apparently this new, basic group grew out of a "Caddoan Root," a term which "refers to a generalized horizon of hunting-agriculturists of the Middle West, out of which it is believed the later groups of the Caddoan family developed on the one hand, and the Mogollon culture on the other." The earliest Mogollon pottery was well established in the region by 700 A.D., although its beginnings probably go back some centuries. Later on, about 1000 A.D., some Pueblo and Hohokam cultural elements crept in, at which time emerged the classic "Mimbres Culture."

A number of eastern traits gives the Mogollon culture individuality: pit-houses with graded entrances, a painted pottery with red decoration on a neutral brown background, the association of red ware and a dark plain ware, scored pottery (decidedly non-Southwestern), stone hoes, full-grooved mauls, large chipped blades, and shell gorgets. Haury points out that if any one of these traits were individually considered it would be meaningless; but that, taken

collectively, they are significant. Affiliation with a particular eastern group is not suggested, but it seems reasonable to assume, for the time being, that a connection between the Mogollon culture and some generalized Mississippi Valley culture did exist.

The fate of the people who produced and sustained the Mogollon culture, a question of interest to every archaeologist, is not certainly known. Haury suggests, however, that they moved south to what is now known as Chihuahua, where they were absorbed.

The hypotheses set forth in this excellent report will doubtless be scoffed at by many competent people. Nevertheless, after examining Haury's material, and after carefully reading his report, I am perfectly willing to go right along with him.

The format of this report cannot be praised too highly, and the plates, the line-drawings, and the graphs are of beautiful quality. Even better is the arrangement of the text. All the data about storage pits are to be found under one caption; all those concerning bonework, under another caption. How easy it is, with this arrangement, to hunt up quickly any item. Compare this manner of presentation with older, long-winded and unordered reports. Of what value are flowery English and well-turned phrases in a scientific discussion? The matter at hand should be stated in brief, crystal-clear English. Frequent use of centered or side heads helps the reader and student. Haury's report is brief and reflects careful work and an orderly mind.

PAUL S. MARTIN

Excavations in Bolivia. W. C. BENNETT. (American Museum of Natural History, Anthropological Papers, Vol. 35, No. 4: 329–507, 48 text figs., New York, 1936.)

Following his *Excavations at Tiahuanaco* (same series, Vol. 34, No. 3), reviewed in AMERICAN ANTIQUITY: 1, 4, the author conducted an archaeological expedition in Bolivia from December 1933 until September 1934, under the auspices of the American Museum of Natural History.

Excavation took place in the Cochabamba section of the Bolivian Lowlands, east of the Andes, and also south of Lake Titicaca in the Bolivian Highlands. The work in the Lowlands was tied in with the existing literature; the work in the Highlands, with the report on Tiahuanaco mentioned above. The present report deals with materials which could be analyzed in the field.

In the Bolivian Lowlands, within the Cochabamba section, twelve trenches were dug. The material could be divided into three phases on the basis of the ceramic contents of forty-one graves. On the whole the cultures encountered can be classified as dominantly Tiahuanacoan with local modifications.

Arani I, classified by Bennett as Derived Tiahuanaco, had stone-covered, bark-lined, direct burials. The pottery consisted of variants of Tiahuanaco forms, designs and colors (polychrome). Handles were frequent, but tripods and

incision were lacking. Derived Tiahuanaco is rather a modification of Classic Tiahuanaco, and antecedent stylistically as well as chronologically to Decadent Tiahuanaco.

Arani II showed, in a type of graves similar to Arani I, a stylistically decadent pottery which presented some additional elements. Handles were still prominent and no urns, incising or modeling were encountered.

Arani III possessed shallower graves and a cruder type of pottery, but the tradition of the previous periods is clearly recognizable, although some Incaic influence is suggested. No urn burials were found at Arani. Metal artifacts were also absent. Other grave-equipment in stone or bone work was meager.

The site of Tiquipaya was found to be comparable to Arani. At Colcapirhua, not far from Tiquipaya, different conditions were encountered. At a lower level single, double or U-shaped urn burials with plain pottery, probably of Guarani origin, were found. In the upper layer direct burials with painted pottery were uncovered. Some copper also was found in this stratum. Inca influence is strongly indicated. There follows an analysis of Nordenskiöld's, Metraux' and von Rosen's findings in the Mizque, Chuquisaca, Tarija, Santa Cruz, Mojos and Beni sections, which show various mixtures of Tiahuanaco, Guarani and Inca cultures.

At the end of the Lowland section a chronological series is attempted. Bennett distinguishes an Early Period with three subgroups: Derived Tiahuanaco, Mizque-Tiahuanaco, Early Arawak; a Middle Period with four subgroups: Decadent Tiahuanaco, Late Arawak, Incised, Guarani; a Late Period with two subgroups: La Paya-Inca, Inca. Bennett admits gaps in our knowledge and presents the above with all due caution.

Early Arawak was found by Nordenskiöld in the Mojos section and is thought to be roughly contemporaneous with Derived Tiahuanaco. Late Arawak, superimposed upon Early Arawak in the Mojos section, employs painted tripod urns with covers, small painted tripod vessels, clay grinders and figurines. A northern origin from Brazil is suggested.

The position of the incised plain ware, found in the Mizque, Mojos and Beni sections, is not clear as yet, with the exception that it falls in the Middle Period.

The Guarani sites are characterized by the lower level at Colcapirhua. Some of these may ultimately have to be ascribed to Arawak origin, although in northwestern Argentine Guarani seems to have appeared very early.

The term La Paya-Inca has been adopted from Ambrosetti, who found an Inca-influenced ware at La Paya in Salta Province, Argentine. It is of wide distribution, found also in north Chile and south Bolivia. Arani III may be contemporaneous with this style.

Inca ware was associated with numerous fortresses built against the Guarani invasions. In the Bolivian Highlands at Chiripa, south of Lake Titicaca, a mound was partly excavated. On the island of Pariti, in a southern pocket of Lake Titicaca, eight trenches were dug. In both of these sites a new culture was

established by ceramics, house styles and possibly other manifestations. The ceramics are either a plain brown ware with flaring rims or a thick yellow-on-red ware exhibiting round, flat-bottomed bowls with perpendicular sides. Handles are rare. The decoration consists of lines, triangles and steps. Some incision and relief modeling of animals was encountered. The houses were rectangular, standing in a circle with contacting corners and facing to the inside. Double walls showed a foundation of small stones with adobe brick on top and a clay-plaster on the inside. Decorated window niches, a thatched roof, a yellow clay floor and stone-paved entry way were other features. Quinoa was found inside the houses. The burials were flexed, had longitudinally deformed skulls, and the grave equipment included some metal and bone artifacts but no pottery.

At Chiripa, Decadent Tiahuanaco was found to be intrusive into the Chiripa culture, whereas at Pariti, Chiripa was superimposed upon Classic Tiahuanaco. Owing to the thick deposit of the Chiripa culture, some time must have elapsed separating Classic Tiahuanaco from Decadent Tiahuanaco.

At Pajchiri, on the island Cumana in Lake Titicaca, a temple is described. Eighteen trenches were dug there also, containing mostly Incaic material. Another site, Lucurmata, at the southeastern end of Lake Titicaca, yielded a semi-subterranean temple. The cut of the stones induced Bennett to conclude that the material from a previous structure was used again in the building of this temple. The ceramics conformed to Tiahuanaco types, primarily of the Classic period. A mound at Llogheta above La Paz showed the expansion of Decadent Tiahuanaco ware in this direction.

On the last page Bennett shows the findings of his work in the Lowlands and in the Highlands in juxtaposition in their relative chronological standing, as follows:

Highlands	*Lowlands*
Inca	Inca
	La Paya-Inca
	Guarani
	Incised
Decadent Tiahuanaco	Decadent Tiahuanaco
	Late Arawak
Chiripa	
Semi-Classic Tiahuanaco	Derived Tiahuanaco
Classic Tiahuanaco	Early Arawak
Early Tiahuanaco	

The report is amply illustrated by photographs, ground plans and other visual aids. The author is to be congratulated upon his methodical presentation and concise summaries. In respect to the newly established Chiripa culture, one would like to know if the author has any opinions about its ethnic relations.

To the literature cited, a few works may be added:

1905: E. von Rosen, Archaeological research on the Argentine and Bolivian frontier. Smithsonian Inst.
1909: M. Uhle, La esfera de influencia del pais de los Incas. Revista Historica IV, Lima.
1913: M. Schmidt, Die Aruaken, ein Beitrag zum Problem der Kulturverbreitung, Ch. V.
1921: E. Nordenskioeld, The Moxos Indians. Leipziger Staedtisches Museum, August.
1931: R. N. Wegner, On the Mojos Indians. Petermann's Mitteilungen, April.
1932: R. N. Wegner, Morphologisch-anthropologische und archaeologisch-ethnologische Ergebnisse der Frankfurter Suedamerika Expedition 1927–29. Forschungen und Fortschritte, VIII, Berlin.

Uhle asserts Incaic influences in the Mojos region, whereas Schmidt and Nordenskiöld claim to have proof for Tiahuanaco influences in the same area. Wegner found three mound cultures on the Beni River in east Bolivia.

HANS E. FISCHEL

The Relation of North American Prehistory to Post-Glacial Climatic Fluctuations. REGINALD G. FISHER. (University of New Mexico Bulletin, Monograph series, Vol. 1, No. 2: 1–91, 28 figs., 4 maps, Santa Fe, 1935.)

The author assumes a broad outlook on the early prehistory of the world in an attempt to show the interrelation between climatology and early archaeology. This refreshing point of view is rarely assumed by archaeologists, although the correlation is frequently considerable. The monograph is divided into three main parts: (1) the behaviour of climate; (2) the significance of climatic changes upon the migration of peoples from the Old World to the New; and (3) "the relation of prehistoric culture in America to culture in Eurasia through a combined analysis of climatic fluctuations and world history." Obviously the theme of this monograph is not deficient in conception, but unfortunately, the contributions of the author to the subject are small, for many statements are either tentative or erroneous. In the first place, as regards ancient climate, the author attempts a quantitative analysis when even qualitative assertions are tentative. In the second place, as regards Asiatic archaeology, the author unfortunately has relied on erroneous or unproven conclusions prevalent in secondary sources. With respect to North American archaeology, on the other hand, the author is more familiar with the primary sources, and consequently has made interesting suggestions involving a more comprehensive interpretation of early North American cultures. Thus, despite the many erroneous statements and unsubstantiated assumptions, the article is not only well worth reading, but stimulating, because of its unfamiliar yet relevant approach to the problems of prehistory.

The first part, comprising about one-half of the eighty pages of text, is a discussion of climate. The author points out the mechanisms of meteorology, the sequence of post-glacial fluctuations in climate, and the natural regions of North America with respect to some possible post-glacial changes in their location. This discussion is, essentially, a résumé of *Climate Through the Ages* by C. E. P. Brooks (1926), and various works of Ellsworth Huntington. As based

on Brooks, climates are divided into two main types—glacial and non-glacial. Fisher holds that the difference between the mean annual temperature of a glacial period as compared to a non-glacial is 2.3° F., whereas Brooks, a professional meteorologist, holds that the difference is 5° F. Thus, under either assumption, by amazingly small changes of temperature, it is possible for climates to fluctuate from glacial to non-glacial, and back again to glacial. It is unfortunate that the author fails to consider the intriguing hypothesis of Simpson[178] that the general temperature of the earth was higher during the Ice Age. Fisher also fails to note the detailed meteorological analysis of Bryan and Cady[179] with regard to the north Atlantic during the Pleistocene.

Continuing the general argument of Brooks, the sequence of post-glacial fluctuations are discussed. These fluctuations are considered to be world-wide (in the northern hemisphere) and contemporaneous. It is unfortunate that the author puts so much credence in a book ten years old. Since that time, a wealth of literature has appeared, resulting in a more restrained concept. Thus, Brooks[180] himself says:

> "I think now that even Huntington went too far in the direction of generalizations, by extending all his climatic pulsations over the whole northern hemisphere, though I made the same mistakes in my study of the subject in 1926 (i.e., *Climate Through the Ages*). . . . The material is insufficient to establish the existence of systematic world-wide rhythms or pulsations of climate."

However, if the author wishes to support the hypothesis of contemporary, world-wide climatic cycles, he should quote Nilsson's[181] valuable data from the East African lake region, which refutes the correlation of Leakey and his followers.

In addition to this general criticism, the author unnecessarily lays himself open to attack by making too many unfounded quantitative statements. Based on dubious references, he affirms that many geologists and climatologists consider that the Daun (Alps), the Fini-glacial (Baltic), and Lake Border (North America) glacial episodes occurred not during the waning stages of the Ice Age, but during the post-glacial cold period (900 B.C.–500 A.D. ca.), i.e., well within historic time. And, since the mean annual temperature change between the Daun and the present is known for parts of western Europe, it leads the author into making exaggerated statements. He not only misapplies this

---

[178] Simpson, G. C., World Climate During Quaternary Period, London Q.J.R. Meteor, Soc., 60, pp. 425–470 1934, with discussion following pp. 471–478.

[179] Bryan, Kirk and Cady, R. C., The Pleistocene Climate of Bermuda, American Journal of Science, Vol. 27, April, 1934.

[180] Brooks, C. E. P., Changes of Climate in the Old World During Historic Time, Quart. J. Roy. Meteor. Soc., Vol. 57, pp. 13–24, 1931.

[181] Nilsson, Erik, Traces of Ancient Changes of Climate in East Africa, Meddelanden, fran, Stockholms Högskolas Geologiska institut, N:o 36, Särtryck Ur Geografiska Annaler, Häfte 1–2, 1935.

figure to the post-glacial cold period, to be consistent, but he also expands its application to include the whole northern hemisphere. There are many other unfounded quantitative statements made. For example, in the final chapter of this first part of the monograph, many natural regions of North America are reconstructed as to their temperature and extent during various periods of post-glacial time.

The second part of the paper is an application of climatic changes to the problem of prehistoric migration of man into North America. Thus, the Arctic is considered as having been favorable for migration from Eurasia to America during the post-glacial warm period in the third Millenium B.C. This concept is extremely fruitful, providing the Arctic regions were sufficiently opened up, and that navigation was sufficiently well developed at this time to make possible voyages of 200 miles or more. The theory is a good example of the general tone of the paper, in that the point of view is refreshing, but the conclusions are not based on indisputable facts. Moreover, if the author had acquainted himself with the voluminous literature published on peat bogs and pollen analysis in relation to climatic fluctuations, he would have found supporting, although not wholly conclusive evidence, for this theory of Arctic migration.

In Botanisches Centralblatt (vol. 149, p. 186, 1926), there is an abstract of an article in Russian, by W. W. Kudrajaschow, on peat from Novaya Zemlya, an island north of Siberia, well within the Arctic circle. This island, furthermore, is several hundred miles north of the northern limit of trees. Here a high frequency of willow, birch, and fir pollen was found, while there were trees of linden, pine, and alder. This pollen analysis certainly suggests the post-glacial warm period. However, the evidence is interpreted as indicating that the pollen was entirely wind-carried for several hundred miles, except perhaps for the willow component. But as against this suspicion, the present reviewer would make the following observations: (1) Stratigraphically speaking, the pollen frequencies of these trees was at a minimum above and at a maximum below. This graduating series strongly suggests that the forests were formerly considerably nearer, and possibly in the immediate neighborhood. At any rate, one can hardly escape the conclusion that the northern limit of forests is a fluctuating zone. (2) Linden trees produce pollen in relatively small quantities, and it is carried chiefly by insects according to Brooks (Quat. J. Roy. Meteor. Soc., vol. 60, p. 382). This fact, then, is a further indication that at least the linden pollen, although rare, probably did not come from very far. However, the evidence is inconclusive in other respects, for in the abstract, the possibility of the peat being interglacial is not considered.

There is also an abstract of another Russian article by V. N. Sukachev, in the Botanisches Centralblatt (Vol. 146, p. 440, 1924–25), on the subject of peat in the tundra region of northern Siberia. The conclusions are not altogether clear, but apparently remains of fir, pine, larch, birch and alder were found and dated to the post-glacial, thus indicating a post-glacial warm period. This conclusion was corroborated by floristics and by the distribution of some special isolated steppe animals. Several other studies of peat bogs in or close to the Arctic circle have been made. Among those scanned by the reviewer, there are many similar indications of warm periods, though the evidence is confusing. (See for example *Pollen Analysis of Kodiak Islands*, by P. W. Bowman, ECOLOGY, pp. 97–100, 1934). Thus, the evidence, so far as it goes, bears out Fisher's conten-

tion that the Arctic regions must be considered as a possible area in which migration from Eurasia to America took place.

The third part of the monograph is a discussion of prehistory and its relation to climatic fluctuations. First, the author distinguishes succinctly the differences between culture traits, culture complexes, and culture horizons. Secondly, with these fundamentals in mind, he proceeds to interpret North American archaeology in its broader aspects. He shows that in many places north of Mexico two cultural horizons are found superimposed the one over the other. The younger is, in part, characterized by pottery and therefore called Ceramic, while the other lacks pottery and is called Osteic, because bone implements become of paramount significance. The evidence of physical anthropology, furthermore, is in keeping with this division of cultural horizons. Thus the concept, though perhaps premature, has great potentiality when applied in North America.

Thirdly, and somewhat along the line of Kroeber in *Supplement to Anthropology*, Fisher reclassifies the prehistoric periods of Europe. The Lower Palaeolithic is called the Lithic, the Upper Palaeolithic and Mesolithic are called the Osteic, and the Neolithic is called the Ceramic. Thus, the conclusion is reached that, in Europe as well as in North America, a Ceramic horizon follows upon an earlier Osteic horizon. The Lithic horizon is stated to be without the scope of the monograph.

Finally, evidence is adduced to show that a similar sequence is found in Asia. These horizons are then arbitrarily dated and the period of their diffusion, especially into North America, is correlated with climatic fluctuations.

The picture presented by Fisher in such completeness is nearly breathtaking. Nearly all the problems of archaeology and cultural growth find place in this momentous scheme. The conclusions are, on the whole, logical deductions from the evidence adduced, but the evidence adduced is a galaxy of truths, half-truths, and unfounded assumptions. Particularly has the author gone astray with reference to Asiatic archaeology and dated climatic fluctuations. Among many erroneous claims is the assertion that, in Eurasia as a whole, the Lithic horizon is followed by an Osteic. There is insufficient evidence known to justify this hypothesis, although, unknown to Fisher, recent unpublished field work of H. de Terra confirms the theory as far as northern India is concerned. A few other unsubstantiated assertions will be mentioned, including one contradiction: (1) The flake tool industry associated with Sinanthropus Pekinensis is stated to be Pre-Mousterian (p. 70, lines 3–4), while the Choukoutien industry is called Pre-Chellean (p. 70, lines 6–7). Actually the two are the same. (2) It is stated that south of the Ice Sheet, Mousterian remains seem to have lasted longer in Asia than in Europe (p. 70). Although this may be true, the reviewer fails to find any evidence for the statement. (3) The Neolithic cultures of western Asia are discussed at great length, dated and correlated with dated climatic fluctuations (pp. 74–6). Such precision of date and

correlation is not only fictitious, but it is also doubtful whether there are any proved Neolithic remains in western Asia, or at least any so-called "Neolithic" that precedes the Chalcolithic. This error unfortunately has been perpetuated in the secondary sources used by Fisher, because, heretofore, most so-called "Neolithic" sites have been incompletely excavated. More recently, further excavations have either definitely yielded copper objects or else have yielded objects that indicate a relation with Chalcolithic cultures elsewhere. However, most archaeologists believe that the Neolithic will eventually be found in this area, after more exhaustive excavations.

Suffice it to say, that taking Asia as a whole, there is no stratigraphic proof of a Lithic horizon being succeeded by an Osteic, and an Osteic by a Ceramic. Furthermore, the distribution, sequence, and date of prehistoric Asiatic cultures is not sufficiently well known for establishing lasting generalities or correlations. One man's guess is as good as another's. For example, consider the original and possibly fruitful theory offered by Menghin in *Weltgeschichte der Steinzeit.* The Paleolithic is divided into three different, major cultures: core, flake, and bone. These three cultures are all believed to have had three different centers of origin, whence they have diffused and in places intermingled to produce hybrid cultures. Although suggestive and intensely stimulating, such generalized interpretations are archaeologically unproven. They are based not on stratigraphy but principally on deductions from typology and tentative assumptions.

The monograph here reviewed is singularly refreshing, as the theme is comprehensive, original and relevant. The execution, however, is unfortunate, as the author is neither critical nor sufficiently objective in handling his material.

F. L. W. Richardson, Jr.

The Corner-Tang Flint Artifacts of Texas. J. T. Patterson. (University of Texas Bulletin, No. 3618: 1–54, 10 plates, 3 text figs., Austin, 1936.)

One wonders what the pace of the world's progress would be, were all of the intellectually fit to adopt scientific hobbies as recreation; and also what would happen if a portion of the vast treasure, expended in witless entertainment, where most are spectators and few are doers, could be used in research work by competent persons.

No one is better fitted to take up a scientific hobby than the person who has succeeded in another science. In this respect, the report on the corner-tang flint artifacts of Texas, written by J. T. Patterson, a zoology professor in Texas University, is a good example of a well done piece of research in another field.

Very little has previously been written concerning this unusual Texas type of knife. Its center of distribution seems to be in south-central Texas, southeast of Abilene. The counties adjoining Taylor County are along the northern border of its distribution. and the reviewer has found sixteen knives and four drills of that type in that area. Apparently, however, according to Prof. Patter-

son's map, these knives are not found to the north of that region, in northwest Texas, nor in northeast Texas.

Prof. Patterson has classified these artifacts into six types, as follows: (1) the base corner tang, (2) the diagonal corner tang, (3) the back corner tang, (4) the mid-back tang, (5) bifurcated and two tang types, and (6) the reworked pieces which usually take the form of drills. The bulletin lists 533 of these artifacts which Prof. Patterson has either personally examined, or of which he has had outline drawings made by reliable persons.

He lists one instance of a hafted knife of this type. The reviewer has seen that knife, and considers the question of its authenticity open to debate. Of all other, unhafted forms of flint blades there is always an unanswered question as to whether they were used as spearheads or as knives. But the eccentrically set tangs, and the curved blades of many of these artifacts, show that they would not be suitable for anything but knives. Prof. Patterson states: "The predominant shape of the blade is triangular, for more than half of the specimens are of this form. The next most common form is the elongated blade, ... A majority of the knives with this form of blade belong to the base corner-tang type, although some of them have the diagonal type of tang. The distinctly curved type of blade is comparatively rare . . . but many knives have one edge convex. . . .

"The knives vary in length from three-quarters of an inch to nine and one-half inches, with an average length of three and three-quarters inches. The widest knife blade measured two and five-eighths inches."

Prof. Patterson concludes that the eccentric placing of the tang produced an unusually efficient skinning knife.

It appears that there is little evidence of the finding of this type of knife elsewhere, even in adjoining states. All of the acceptable evidence seems to indicate that this is purely a prehistoric type of knife. However, the reviewer doubts that most of these knives have any very great age, because of their usual lack of patination; but they probably are several hundred years or more old at any rate, and the patinated blades are much older. One regrets that Prof. Patterson did not make a study of the differences in patination in the various types of corner-tang knives, to see whether shape varieties of knives show parallel variation in patination. In the reviewer's experience a certain type of long, straight, slender blade is usually patinated white, while some short, broader types are unpatinated.

This bulletin is well illustrated with many unusually clear photographs of the various types of corner-tang knives, and it represents a considerable amount of painstaking research.

CYRUS N. RAY

SOME RECENT PUBLICATIONS

UPPER NORTH AMERICA

Bartlett, Katharine, The Utilization of Maize among the Ancient Pueblos. University of New Mexico Bulletin (Symposium on Prehistoric Agriculture), Anthropological Series 1, No. 5: 29–34, Albuquerque, October, 1936.

Bennett, Leonard D., Interesting Artifacts of Clay County, Texas. Bulletin, Texas Archeological and Paleontological Society 8: 87–93. Abilene, September, 1936.

Bulletin of the Archaeological Society of North Carolina, Vol. 3, No. 2, 20 pp., September, 1936.

Dickinson, S. D., Ceramic Relationships of the Pre-Caddo Pottery from the Crenshaw Site. (Texas.) Texas Archeological and Paleontological Society 8: 56–70, Abilene, September, 1936.

Franke, Paul R. and Watson, Don, An Experimental Corn Field in Mesa Verde National Park. (Colorado.) University of New Mexico Bulletin (Symposium on Prehistoric Agriculture), Anthropological Series 1, No. 5: 35–41, Albuquerque, October, 1936.

Halseth, Odd S., Prehistoric Irrigation in the Salt River Valley. (Arizona.) University of New Mexico Bulletin (Symposium on Prehistoric Agriculture), Anthropological Series 1, No. 5: 42–47, Albuquerque, October, 1936.

Harris, R. K., Indian Campsites of the Upper Trinity River Drainage. (Texas.) Bulletin, Texas Archeological and Paleontological Society 8: 113–133, Abilene, September, 1936.

Haury, Emil, The Snaketown Canal. (Arizona.) University of New Mexico Bulletin (Symposium on Prehistoric Agriculture), Anthropological Series 1, No. 5: 48–50, Albuquerque, October, 1936.

Hendry, C. W. and Bellue, M. K., An Approach to Southwestern History through Adobe Brick Analysis. University of New Mexico Bulletin (Symposium on Prehistoric Agriculture), Anthropological Series 1, No. 5: 65–72, Albuquerque, October, 1936.

Hinsdale, W. B. and Greenman, Emerson F., Perforated Indian Crania in Michigan. Occasional Contributions from the Museum of Anthropology, University of Michigan, No. 5, 15 pp., 5 plates, Ann Arbor: University of Michigan Press, August, 1936.

Hrdlička, Aleš, The Coming of Man from Asia in the Light of Recent Discoveries. (Alaska.) Smithsonian Report for 1935, pp. 463–470, 1 plate, Washington: Smithsonian Institution, 1936.

Jackson, A. T., A Perpetual Fire Site. (Texas.) Bulletin, Texas Archeological and Paleontological Society 8: 134–174, Abilene, September, 1936.

Jones, Volney H., A Summary of Data on Aboriginal Cotton in the Southwest. University of New Mexico Bulletin (Symposium on Prehistoric Agriculture), Anthropological Series 1, No. 5: 51–64, Albuquerque, October, 1936.

Leh, Leonard L., Prehistoric Pueblo Ruins in Range Creek Canyon, Utah. University of Colorado Studies 23: 159–168, 1936.

Lemley, Harry J., Discoveries Indicating a Pre-Caddo Culture on Red River, Arkansas. Bulletin, Texas Archeological and Paleontological Society 8: 25–55, Abilene, September, 1936.

Morrow, James G., A Prehistoric Cremated Burial of the Abilene Region. (Texas.) Bulletin, Texas Archeological and Paleontological Society 8: 17–24, Abilene, September, 1936.

Olson, Ronald L., Recent Archaeological Work on the Pacific Coast. Proceedings, Fifth

Pacific Science Congress, Canada, 1933, 4: 2841–2846, Toronto: University of Toronto Press, 1934.

Ray, Cyrus N., Some Unusual Cremated Burials Near Colorado, Texas. Bulletin, Texas Archeological and Paleontological Society 8: 9–16, Abilene, September, 1936.

Smith, Victor J., The Pottery Horizons of Texas. Bulletin, Texas Archeological and Paleontological Society 8: 94–112, Abilene, September, 1936.

Witte, Adolph H., Kitchen Middens of the Upper Red River Drainage. (Texas.) Bulletin, Texas Archeological and Paleontological Society 8: 71–86, Abilene, September, 1936.

MIDDLE AMERICA

Höltker, Georg, Das Sündenbewusstein bei den Aztekan im alten Mexiko. Anthropos 31, Nos. 1, 2: 213–234, 1936.

Joyce, T. A., A Maya Pottery Beaker from El Salvador. British Museum Quarterly 10, No. 1: 25–26, 1935.

Osborne, Lilly de Jongh, Guatemala Textiles. Publications, Middle American Research Series 6, 112 pp., New Orleans: Tulane University, 1935. Price $2.50.

SOUTH AMERICA

Bennett, Wendell C., Excavations in Bolivia. American Museum of Natural History, Anthropological Papers 35, Part 4: 329–507, 48 figs., New York, 1936.

de Tuya, Angel, Las Cebezas—Trofeos de la Cerámica de Nazca. Investigación y Progreso 10, No. 3: 70–76, Madrid, 1936.

de Tuya, Angel, La Magia en la Medicina Peruana Incaica. Investigación y Progreso 9, No. 9: 271–276, Madrid, 1935.

Linné, S., A Sepulchral Urn from Paraguay. Ethnos 1, No. 5: 133–136, Stockholm: Statens Ethnografiska Museum, 1936.

Popenoe, Dorothy Hughes, The Ruins of Tenampua, Honduras. Smithsonian Report for 1935: 559–575, 5 Plates, Washington: Smithsonian Institution, 1936.

Thompson, J. Eric, Archaeology of South America. Field Museum of Natural History, Anthropological Leaflet 33, Chicago, 1936.

Trimborn, Hermann (ed.) and others, La Cerámica Peruana del Museo Arquelogico del Madrid. Actas y Memorias de la Sociedad Española de Antropologia, Etnografia y Prehistoria 14, No. 2, Madrid, 1935.

EARLY MAN

Lugn, A. L., The Pleistocene Geology of Nebraska. (Artifacts with pleistocene fauna.) Bulletin, Nebraska Geological Survey 10, 2nd. Series, pp. 183–88, Lincoln: University of Nebraska, 1935.

GENERAL

Barbeau, Marius, The Siberian Origin of Our Northwestern Indians. Proceedings, Fifth Pacific Science Congress, Canada, 1933, 4: 2777–89, Toronto: University of Toronto Press, 1934.

Kempton, James H., Maize as a Measure of Indian Skill. University of New Mexico Bulletin (symposium on Prehistoric Agriculture), Anthropological Series 1, No. 5: 19–28, Albuquerque: University of New Mexico Press, October, 1936.

Weatherwax, Paul, The Origin of the Maize Plant and Maize Agriculture in Ancient America. University of New Mexico Bulletin (Symposium on Prehistoric Agriculture), Anthropological Series 1, No. 5: 5–10, Albuquerque: University of New Mexico Press, October, 1936.